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THE APPLICATION OF OZONE TO THE PURIFICATION OF SWIMMING POOLS.¹

By WALLACE A. MANHEIMER, Ph. D., Secretary American Association for Promoting Hygiene and Public Baths.

Recirculation and disinfection of swimming pool water may now be accepted as standard and mutually interdependent procedures in the sanitary control of plunge baths. Experimental data² collected during the past several years have demonstrated beyond doubt the necessity of resorting to refiltration to aid in swimming pool purification unless fresh, warm, well-filtered water is constantly supplied to the pool. In the latter process the waste of water, and of coal for heating it, coupled with the difficulty of removing all suspended matter by an initial filtration are sufficient reasons for adopting refiltration of the pool water as a standard procedure. A clear water is essential not mainly because of esthetic reasons but for the reduction of the hazard of drowning. No method in actual practice measures up to refiltration.

Concerning the methods of disinfection, the writer has already set forth³ the data and conclusions from a comparative study of all the chemicals hitherto applied to pool water purification. Ultra-violet light in actual operation was not considered a sufficiently powerful germicide. Copper sulphate was expensive in application and unreliable unless large quantities were employed, at which time the water became disagreeable to swim in. Furthermore, the transparency of the water was impaired and the tile lining of the pool stained, entailing additional labor in cleaning the pool.

Chlorine compounds, calcium hypochlorite, sodium hypochlorite, and gaseous chlorine, while effective to a marked degree as disinfectants, required, for satisfactory use in swimming pools, a type of technical control usually not available. A study of the practical application of these chemicals to swimming pool purification has demonstrated in the large majority of pools that either the quantity added was

¹ From the Research Laboratory of the Department of Health of New York City.

² *Am. Phy. Ed. Rev.*, 1912, 17, p. 669; *Jour. Inf. Dis.*, 1914, 15, p. 159; *U. S. Pub. Health Rep.*, Sept. 17, 1915 (reprint No. 290); *Jour. Inf. Dis.*, 1917, 20, p. 1; *Jour. Am. Soc. Promote Hyg. & Pub. Baths*, 1918, vol. 1, p. 19.

³ *Jour. Inf. Dis.*, 1917, vol. 20, No. 1, p. 1.

insufficient to effect proper bacterial reduction or that the water had a disagreeable odor and taste due to the pressure of an excess of the reagents. It is difficult to strike a nice balance between odor and taste on the one hand and bacterial purity on the other in the case of chemicals usable only in minimum quantities.

In consequence of the disadvantages attending the use of the common chemicals for water purification when applied in swimming pools the writer decided to attempt the application of ozone for this purpose.

The application of ozone to water purification presents no novelty. Vosmaer¹ in his comprehensive treatise gives no less than one hundred and fifty-one references to literature on this subject. According to Spaulding² there are forty-nine large ozone plants abroad, having a daily water delivery capacity of over 84,000,000 gallons. The plant in Petrograd alone, delivers 24,000,000 gallons a day and the plant at Paris over 12,000,000 gallons a day. Rosenau³ in a summary of this question states: "Ozone is one of the most satisfactory methods of purifying water from a sanitary standpoint. As a germicide it is the most effective of all methods used, except boiling. A well-ozonized water is practically sterile and the organic matter is partially oxidized. It is true that a few resisting spores are not killed, but these are harmless when taken by the mouth."

The writer first applied ozone to the purification of a miniature pool. He concluded from his experiments⁴ that ozone efficiently purifies water if proper contact of ozone and water be effected; that the application of ozone to pool water is automatic in its control and reliable in disinfecting pools. Furthermore, it can be added without objectionable result in any excess, since it is not very soluble in water. It oxidizes most of the organic matter in the water and is inexpensive in application.

As a result of these preliminary tests, the writer, in an effort to determine the applicability on a large scale, secured the installation of a large ozone plant at the Twenty-third Street Bath, New York. The following data have been gathered from tests on that installation.

Details of Installation.

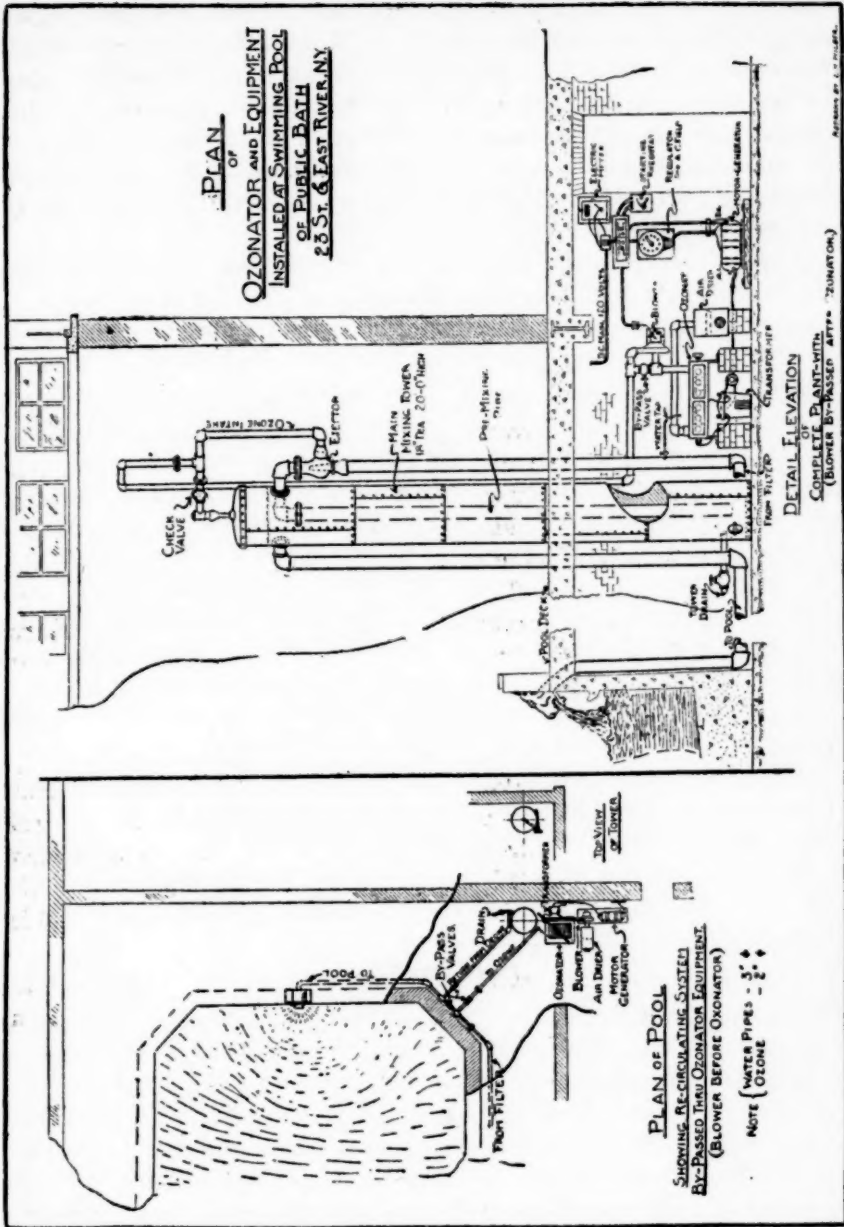
The writer soon found out in his preliminary experimental work on ozone⁴ that the engineering details connected with the application of ozone on a large scale are of paramount importance. The most important feature in the application of ozone to water is the securing of a thorough mix of ozonized air and water. No doubt the action of

¹ Vosmaer "Ozone" D. Van Nostrand Co., 1916.

² Spaulding: "Report on Application of Ozone to Water Purification," N. Y. State Dept. of Health, 1913.

³ Preventive Medicine & Hygiene, D. Appleton, 1913, p. 794.

⁴ "Ozone Disinfection of Swimming Pools," Journal of the American Assn. for Promoting Hygiene & Public Baths, 1918, Vol. I, No. 1, p. 19.



ozone on bacteria and organic matter is exceedingly rapid, as was evidenced by the preliminary work, but if the time of exposure of the water to the ozonized air is short, three parts per million of ozone (which is at least three times the necessary quantity) are required to obtain satisfactory results. A mechanical mixer was designed to insure intimate contact of the gas with water, but this was abandoned for the simpler and surer method recommended by Vosmaer, namely, the use of a tall tower.

It was finally determined to install a 20-foot tower in the Twenty-third Street Bath and to pass the water of the swimming pool into the bottom of this tower after filtration. If this tower is constructed so that the top is on a level with the surface of the pool, there is practically no additional cost in the operation of the recirculation system.¹

Two systems of introducing the ozone into the water were installed at the same time so as to ascertain their relative merits. One was the use of a common ejector (see diagram) and the other the use of a small centrifugal air blower. The ozonized air is introduced into the pipe leading down through the center of the tower, where both water and ozone are liberated. The ozone, of course, bubbles through the water quite rapidly, the water (in its slower upward passage) being thus brought continuously into contact with fresh ozone. The ozonized water is then drawn off from the top of the tower and returned to the shallow end of the pool.

It was found when the circulating pump was stopped that water backed down into the ozonator. The air in the pipe which carries both air and water into the bottom of the mixing tower rises and carries the water with it. By a special arrangement² of pipes and valves, the water and ozone from this pipe are returned to the mixing tower (see diagram).

Bacterial Data.

The bacterial counts in this pool were so low after continuous operation of the ozone machine, that it was deemed advisable to add a large number of *B. coli* to the water in order to observe the efficiency of ozone on heavily polluted water. Accordingly a mass culture of *B. coli* was emulsified in salt solution and thrown into the pool. In order to secure thorough mixing of the bacteria with the pool water and to keep the pollution high, the circulating pump was shut down between 10 a. m. and 2 p. m., a long-handled brush was used to stir the water, and this, together with the agitation produced by the bathers, resulted in a uniform mix. The pool was then operated as usual and 2 hours later the tests were made.

¹ The writer is indebted to Mr. S. Palmer for many practical suggestions and for the accompanying drawings which set forth the details of installation.

² I am indebted to Mr. Willard A. Kitts, Jr., for the ingenious solution of this problem.

ONE PART OF OZONE PER MILLION OF WATER.

(NOTE.—All bacterial counts are averages of three or more determinations.)

Using ejector:

Bacterial count in the artificially infected pool, 3,700 per cubic centimeter.

After filtration and before ozonation, 1,850 per cubic centimeter.

After ozonation, no growth in 1 cubic centimeter.

After ozonation, no growth in 3 cubic centimeters.

In addition to plating one cubic centimeter of the water delivered from the ozone tower, three cubic centimeter samples were plated as well. In the majority of cases no growths were obtained.

Using blower:

Pool water in the artificially infected pool, 3,500 per cubic centimeter.

After filtration and before ozonation, 1,540 per cubic centimeter.

After ozonation, no growth in 1 cubic centimeter.

After ozonation, no growth in 3 cubic centimeters.

The results, using the blower, are identical with the foregoing. We conclude therefore that when one part per million of ozone is used, either with an ejector or with a centrifugal blower (which delivers more air) the pool water artificially contaminated with *B. coli* is sterilized.

USING 0.5 PART OZONE PER MILLION OF WATER.

The foregoing results were so striking that it was determined to cut down the amount of ozone supplied to the pool to ascertain the safety factor allowed when supplying one part of ozone per million of water. For this purpose the output of the ozonator was reduced to one-half by removing three of the six tubes.

Using ejector:

Count from pool (artificially infected), 2,700 per cubic centimeter.

After filtration and before ozonation, 1,580 per cubic centimeter.

After ozonation, 1½ colonies per cubic centimeter.

After ozonation, 1 to 3 colonies in 3 cubic centimeter samples.

When using half part of ozone per million of water and introducing the ozone by means of the ejector, the contaminated pool water was delivered in a relatively pure condition. A pool operated in this way, using half the quantity designed, while not delivering entirely sterile water, would be sufficiently pure for all practical purposes.

Using blower:

Count from pool (artificially infected), 3,020 per cubic centimeter.

After filtration and before ozonation, 1,150 per cubic centimeter.

After ozonation, 130 per cubic centimeter.

When the blower was used a larger number of bacteria escaped destruction. This was due, in the writer's opinion, to the larger quantity of air introduced into the ozonator, resulting in a dilution of the ozone, and to the more rapid escape of the gas from the water.

A noticeable odor of ozone is observed when the blower is used, indicating that the ozone escapes without a sufficient opportunity of mixing with the water. The conclusion is reached, therefore, that the use of a turbine blower is inferior to that of an ejector, and that a great dilution of ozone in air is a disadvantage.

Cost Data.¹

The installation cost in normal times would probably be at the rate of about 3 cents a gallon of capacity of the swimming pool. This cost will naturally vary from time to time with the cost of labor and materials. The electrical current consumption when using alternating current is 2 kilowatts per day, which amounts to from 10 to 14 cents if the cost of current varies between 5 and 7 cents per kilowatt. To this should be added 1 cent a day for the maximum cost of replacing the calcium chloride in the air dryer. The total daily cost of operation with alternating current for 60,000 gallons of water is between 11 and 15 cents. If direct current is supplied, a motor generator must be used, increasing the cost by from 10 to 15 cents a day (2 kilowatts). These figures are based upon local prices of electrical current. In plants where electrical current is generated on the premises, the cost, already very low, will be brought down still more.

The plant when once installed and adjusted is automatic and requires practically no care. The water is bleached, gradually assuming a transparent blue color, enhancing the appearance of the pool and decreasing the hazard from drowning. There is no occasion for renewal of the water, which can be retained for an indefinite period in a pure state.

The cost of water in New York City is at the rate of \$1 per 1,000 cubic feet; thus, to fill the pool costs \$8 for water alone. To heat the water during the cold season from the temperature in the main to that of the pool requires an average expenditure of 3 tons of coal, costing about \$18. The cost of labor for cleaning the pool is about \$4.² The total cost is about \$30. By using the ozone system the saving in the course of a short time will make up for the cost of the installation, while maintaining a clean and safe pool.

The above operating and installation costs are estimated on the basis of one part of ozone per million parts of water, which under the average conditions that obtain in swimming pools allows 100 per cent safety factor in water sterilization.

¹ The writer is indebted to Mr. G. S. Eble, engineer in charge of baths of the borough of Manhattan, for many of the figures on cost.

² In municipal pools, while there would probably be no reduction of the pay roll on account of other duties to which the attendants could be assigned, nevertheless a labor saving of at least \$4 is effected. Three attendants are occupied for about two and one-half hours in scrubbing out the pool.

Summary and Conclusion.

1. Refiltration combined with disinfection of swimming-pool water is a standard procedure in the sanitary control of swimming pools.

2. The methods of disinfection hitherto employed are objectionable on one score or another. Ultraviolet light in actual practice has proved ineffective; copper sulphate in low dilutions is unreliable and in high concentration is not only costly, but produces a water disagreeable to swim in; chlorine compounds, while effective as disinfectants, require a technical control usually not available in swimming pools, and when used in excess produce objectionable taste and odors in the water.

3. Ozone when properly applied to the water of a swimming pool effectively purifies the water. When one part of ozone per million parts of water is used, the result is sterile water. When half part ozone per million parts of water is used, a bacterial reduction of 99.8 per cent results, except when too great an excess of air is introduced with the ozone.

4. A study of the cost of operation of the ozonator has shown that a current consumption of 2 kilowatts per day with alternating current and of 4 kilowatts per day with direct current, plus 1 cent a day for calcium chloride, represents the total operating cost for a 60,000-gallon pool. This amounts to 11 to 15 cents a day for alternating current (at 5 to 7 cents per kilowatt) and to 21 to 29 cents a day with direct current. The cost of refilling the pool is at least \$30. The use of the ozonator decreases the number of times the pool must be emptied to such an extent that the cost of the installation is soon paid for.

5. The application of ozone to the purification of swimming pools is automatic in control, reliable in action, and inexpensive in application. Accordingly, we recommend the consideration of this chemical as a standard procedure in the sanitary control of swimming pools.

The writer desires to acknowledge his appreciation of the assistance which both Mr. Todd, of the New York City bureau of public buildings and offices, and Mr. W. A. Kitts, jr., have rendered in making the above experiments possible.

PREVALENCE OF DISEASE.

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.

UNITED STATES.

EXTRA-CANTONMENT ZONES—CASES REPORTED WEEK ENDED FEB. 26.

CAMP BEAUREGARD ZONE, LA.

Cerebrospinal meningitis:	
Pineville.....	1
German measles:	
Alexandria.....	2
Measles:	
Alexandria.....	3
Pineville.....	2
Boyce.....	3
Mumps:	
Alexandria.....	5
Smallpox:	
Alexandria.....	1
Pineville.....	1
Tuberculosis:	
Sharp Village.....	1

CAMP HOWIE ZONE, TEX.

Fort Worth:	
Chicken pox.....	2
Diphtheria.....	1
Measles.....	1
Mumps.....	2
Smallpox.....	10
Tuberculosis, pulmonary.....	5

CAMP DEVENS ZONE, MASS.

Chicken pox:	
Littleton.....	7
Erysipelas:	
Lancaster.....	1
German measles:	
Ayer.....	12
Littleton.....	2
Measles:	
Ayer.....	2
Lancaster.....	2
Westford.....	1
Mumps:	
Lancaster.....	6

CAMP DODGE ZONE, IOWA.

Cerebrospinal meningitis:	
Des Moines.....	1
Chicken pox:	
Des Moines.....	1

CAMP DODGE ZONE, IOWA—continued.

Diphtheria:	
Des Moines.....	3
Erysipelas:	
Woodward.....	1
German measles:	
Des Moines.....	4
Gonorrhea:	
Des Moines.....	4
Gonorrhea and chancre:	
Des Moines.....	1
Measles:	
Des Moines.....	4
Grimes.....	13
Mumps:	
Granger.....	6
Pneumonia:	
Des Moines.....	1
Scarlet fever:	
Des Moines.....	13
Grimes.....	1
Smallpox:	
Des Moines.....	20
Granger.....	1
Madrid.....	1
Syphilis:	
Des Moines.....	6

CAMP FUNSTON ZONE, KANS.

Cerebrospinal meningitis:	
Manhattan.....	1
Chicken pox:	
Junction City.....	3
Manhattan.....	1
Measles:	
Manhattan.....	26
Junction City.....	7
Milford.....	1
Alta Vista.....	5
Leonardville.....	5
Mumps:	
Manhattan.....	6
Junction City.....	5
Randolph.....	1
Pneumonia:	
Manhattan.....	2
Riley.....	2

CAMP FUNSTON ZONE, KANS.—continued.

Scarlet fever:	
Manhattan.....	2
Junction City.....	1
Smallpox:	
Manhattan.....	17
Ogden.....	1
Randolph.....	1
Whooping cough:	
Manhattan.....	2

CAMP GORDON ZONE, GA.

Atlanta:	
Cerebrospinal meningitis.....	7
Chicken pox.....	2
Diphtheria.....	6
German measles.....	5
Gonorrhea.....	5
Measles.....	9
Mumps.....	21
Pneumonia.....	3
Septic sore throat.....	2
Scarlet fever.....	5
Smallpox.....	7
Syphilis.....	9
Tuberculosis.....	8
Whooping cough.....	3
Scottdale:	
Smallpox.....	1

CAMP GREENE ZONE, N. C.

Charlotte Township:	
Chicken pox.....	1
German measles.....	8
Gonorrhea.....	9
Measles.....	21
Mumps.....	4
Scarlet fever.....	1
Syphilis.....	13
Syphilis and gonorrhea.....	1
Tuberculosis.....	2
Whooping cough.....	7

CAMP HANCOCK ZONE, GA.

Cerebrospinal meningitis:	
Augusta.....	6
New Savannah Road.....	1
German measles:	
Augusta.....	23
North Augusta.....	2
Measles:	
Augusta.....	26
Hephzibah.....	2
Tuberculosis, pulmonary:	
Augusta.....	5

CAMP JACKSON ZONE, S. C.

Columbia:	
Cerebrospinal meningitis.....	2
Diphtheria.....	2
Measles.....	10
Mumps.....	8
Roseola.....	3

CAMP JOSEPH E. JOHNSTON ZONE, FLA.

Jacksonville:	
Chicken pox.....	1
Diphtheria.....	1
Cerebrospinal meningitis.....	5

CAMP JOSEPH E. JOHNSTON ZONE, FLA.—continued.

Jacksonville—Continued.	
Measles.....	32
Mumps.....	5
Pellagra.....	1
Tuberculosis.....	5
Typhoid fever.....	6
Whooping cough.....	4

FORT LEAVENWORTH ZONE, KANS.

Chicken pox:	
Leavenworth.....	16
Erysipelas:	
Leavenworth.....	1
German measles:	
Leavenworth.....	3
Leavenworth County.....	3
Gonorrhea:	
Leavenworth.....	5
Measles:	
Leavenworth.....	1
Leavenworth County.....	3
Mumps:	
Leavenworth.....	1
Pneumonia, local:	
Leavenworth.....	1
Leavenworth County.....	3
Smallpox:	
Leavenworth.....	6
Leavenworth County.....	5
Typhoid fever:	
Leavenworth County.....	1

CAMP LEWIS ZONE, WASH.

German measles:	
Steilacoom.....	3
Clover Creek.....	1
Spanaway.....	3
Lakeview.....	4
Farland.....	2
Gravelly Lake.....	2
Mumps:	
Lake City.....	1
Scarlet fever:	
Steilacoom.....	2
Tuberculosis:	
Steilacoom Lake.....	1
Lakeview.....	2
Whooping cough:	
Gravelly Lake.....	1

CAMP LOGAN ZONE, TEX.

Houston:	
Chicken pox.....	4
German measles.....	3
Measles.....	15
Mumps.....	5
Pneumonia.....	3
Scarlet fever.....	1
Smallpox.....	12
Tuberculosis.....	4
Magnolia Park	
Chicken pox.....	1

CAMP MACARTHUR ZONE, TEX.

Waco:	
Chicken pox.....	9
German measles.....	9
Gonorrhea.....	2

CAMP MACARTHUR ZONE, TEX.—continued.

Waco—Continued.

Measles.....	20
Mumps.....	12
Pneumonia, lobar.....	3
Smallpox.....	4
Tuberculosis.....	1
Precinct Two:	
Typhoid fever.....	1

CAMP M'CLELLAN ZONE, ALA.

Cerebrospinal meningitis:

Precinct Seventeen.....	1
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Chicken pox:

Anniston.....	32
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Measles:

Anniston.....	1
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Mumps:

Anniston.....	1
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Pneumonia:

Anniston.....	3
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Smallpox:

Anniston.....	3
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Blue Mountain.....	1
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Oxford.....	1
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Whooping cough:

Anniston.....	1
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NORFOLK COUNTY NAVAL DISTRICT, VA.

Cerebrospinal meningitis:

Portsmouth.....	1
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South Norfolk.....	2
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Measles:

Portsmouth.....	12
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Norfolk County.....	5
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Mumps:

Portsmouth.....	1
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Pneumonia:

Portsmouth.....	1
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Norfolk County.....	4
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Scarlet fever:

Portsmouth.....	1
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Norfolk County.....	1
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Tuberculosis:

Norfolk County.....	4
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Whooping cough:

Portsmouth.....	1
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FORT OGLETHORPE ZONE, GA.

Cerebrospinal meningitis:

Chattanooga.....	2
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Ridgedale.....	1
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Chicken pox:

Chattanooga.....	1
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North Chattanooga.....	1
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Diphtheria:

Chattanooga.....	2
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German measles:

Chattanooga.....	2
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North Chattanooga.....	1
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East Lake.....	1
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Rossville.....	1
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Measles:

Chattanooga.....	2
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North Chattanooga.....	1
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FORT OGLETHORPE ZONE, GA.—continued.

Measles—Continued.

East Lake.....	1
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Rossville.....	2
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Mumps:

Chattanooga.....	6
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North Chattanooga.....	1
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East Lake.....	7
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Pneumonia:

Chattanooga.....	1
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East Lake.....	1
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Rossville.....	1
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Scarlet fever:

Chattanooga.....	1
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Smallpox:

Chattanooga.....	8
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Syphilis:

Chattanooga.....	1
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Tuberculosis:

St. Elmo.....	1
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Chattanooga.....	1
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CAMP SEVIER ZONE, S. C.

Cerebrospinal meningitis:

Judson Mills.....	1
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Measles:

Chickspring Township, rural.....	1
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Union Bleachery.....	1
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Mumps:

Chickspring Township, rural.....	1
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CAMP SHELBY ZONE, MISS.

Hattiesburg:

Chicken pox.....	8
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German measles.....	1
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Malaria.....	4
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Measles.....	2
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Mumps.....	5
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Scarlet fever.....	1
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Smallpox.....	5
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CAMP SHERIDAN ZONE, ALA.

Montgomery:

Cerebrospinal meningitis.....	3
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Cerebrospinal meningitis carriers.....	2
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German measles.....	2
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Measles.....	19
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Mumps.....	4
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Scarlet fever.....	1
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Smallpox.....	9
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Typhoid fever.....	1
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Rural zone:

Measles.....	1
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Whooping cough.....	1
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CAMP SHERMAN ZONE, OHIO.

Diphtheria:

Chillicothe.....	1
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German measles:

Chillicothe.....	9
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Measles:

Chillicothe.....	1
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Liberty Township.....	5
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Scarlet fever:

Scioto Township.....	1
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Tuberculosis, pulmonary:

Chillicothe.....	1
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CAMP ZACHARY TAYLOR ZONE, KY.

Cerebrospinal meningitis:	
Jefferson County.....	1
Louisville.....	3
Diphtheria:	
Jefferson County.....	1
Louisville.....	7
German measles:	
Jefferson County.....	2
Measles:	
Jefferson County.....	2
Louisville.....	42
Scarlet fever:	
Louisville.....	4
Smallpox:	
Louisville.....	3
Trachoma:	
Jefferson County.....	4
Tuberculosis, pulmonary:	
Louisville.....	27
Typhoid fever:	
Louisville.....	1
Whooping cough:	
Louisville.....	2

TIDEWATER HEALTH DISTRICT, VA.

Cerebrospinal meningitis:	
Newport News.....	2
Hampton.....	1
Chicken pox:	
Newport News.....	1
German measles:	
Hampton.....	8
Phoebe.....	2
Measles:	
Newport News.....	2
Hampton.....	7
Phoebe.....	1
Pneumonia:	
Hampton.....	1
Phoebe.....	1
Tuberculosis:	
Newport News.....	1
Hampton.....	1
Typhoid fever:	
Hampton.....	1
Whooping cough:	
Newport News.....	10

CAMP TRAVIS ZONE, TEX.

San Antonio:	
Measles.....	4
Mumps.....	3
Scarlet fever.....	1
Tuberculosis.....	1

CAMP WADSWORTH ZONE, S. C.

Cerebrospinal meningitis:	
Drayton Mills.....	2

CAMP WADSWORTH ZONE, S. C.—continued.

Chicken pox:	
Spartanburg.....	1
Glenn Springs.....	1
Diphtheria:	
Spartanburg.....	1
German measles:	
Spartanburg.....	7
Pauline.....	2
Cross Anchor.....	1
Measles:	
Spartanburg.....	20
Pauline.....	2
Glenn Springs.....	1
Saxon Mills.....	4
Fair Forest.....	1
Mumps:	
Spartanburg.....	3
Pneumonia:	
Spartanburg.....	3
Pauline.....	1
Saxon Mills.....	1
Tonsillitis, ulcerative:	
Glenn Springs.....	1
Tuberculosis:	
Spartanburg.....	1
Glenn Springs.....	1
Whooping cough:	
Spartanburg.....	7

CAMP WHEELER ZONE, GA.

Cerebrospinal meningitis:	
Macon.....	3
Chicken pox:	
Macon.....	3
Diphtheria:	
Macon.....	1
German measles:	
Macon.....	2
Gonorrhea:	
Macon.....	2
Malaria:	
Macon.....	1
Measles:	
Macon.....	3
East Macon.....	1
Mumps:	
Macon.....	35
East Macon.....	17
Scarlet fever:	
Macon.....	1
East Macon.....	1
Smallpox:	
East Macon.....	10
Syphilis:	
Macon.....	1
Tuberculosis:	
Macon.....	1
Whooping cough:	
Macon.....	8

CURRENT STATE SUMMARIES.

Alabama.

From Collaborating Epidemiologist Perry, by telegraph, for week ended February 23, 1918:

Measles and smallpox abating.

California.

From the California State Board of Health, by telegraph, for week ended February 23, 1918:

Measles continues to increase in prevalence, especially in southern California; 1,400 cases in California. Fifteen cases smallpox; Fresno County 5, Imperial County 4, Los Angeles 3, San Francisco 2, Kern County 1. Six cases cerebrospinal meningitis; San Francisco 2, Oakland 2, Los Angeles 1, Orange County 1. Mumps shows great increase, particularly in San Francisco and Los Angeles.

Reported by mail for preceding week (ended Feb. 16):

Cerebrospinal meningitis.....	8	Pneumonia.....	54
Chicken pox.....	230	Poliomyelitis.....	1
Diphtheria.....	81	Scarlet fever.....	102
Erysipelas.....	19	Smallpox.....	22
German measles.....	303	Syphilis.....	31
Gonococcus infection.....	63	Trachoma.....	3
Malaria.....	1	Tuberculosis.....	107
Measles.....	968	Typhoid fever.....	11
Mumps.....	55	Whooping cough.....	67
Pellagra.....	1		

Connecticut.

From Collaborating Epidemiologist Black, by telegraph, for week ended February 23, 1918:

No unusual prevalence. Two cerebrospinal meningitis Stanford, 1 poliomyelitis Bristol.

Indiana.

From the State Board of Health of Indiana, by telegraph, for week ended February 23, 1918:

Scarlet fever, schools closed: Livonia, Washington County; Olive Branch, Randolph County; Longfellow School, Davies County; North Manchester College, Wabash County. Diphtheria, epidemic: Franklin, Parker, Randolph County. Measles, epidemic: Decatur, New Lisbon, Henry County, Letts, Fayette County, Rochester, New Augusta, Fort Wayne. German measles, epidemic: Gosport, Aurora, Milroy. Smallpox, epidemic: Columbus, Cartersburg, Plainville, Frankfort, Ashboro, Pike County. Whooping cough, epidemic: Lockville, Elkhart County. Epidemic gastroenteritis: Greencastle. Rabies, epidemic, dogs: Columbus, Connorsville, Vigo County.

Kansas.

From Collaborating Epidemiologist Crumbine, by telegraph, for week ended February 23, 1918:

Meningitis, in cities: Augusta 2, Beloit 1, Kansas City 1, Leon 1, Luray 1, Manhattan 1, Seneca 1. Meningitis carriers: Topeka 1. Smallpox, in cities: Coffeyville

12, Kansas City 43, Leavenworth 7, Topeka 11, Wichita 24; in counties: Butler 10, Cherokee 14, Crawford 15.

Louisiana.

From Collaborating Epidemiologist Dowling, by telegraph, for week ended February 23, 1918:

Meningitis: Bienville 1, Caddo 1, Madison 1, Orleans 3, Vermilion 1, Winn 1.

Minnesota.

From Collaborating Epidemiologist Bracken, by telegraph, for week ended February 23, 1918:

Smallpox (new foci): Aitkin County, Solana Township 1; Mower County, Leroy Township 1; Hennepin County, Dayton village 1, Rogers village 3; Fillmore County, Arendahl Township 2; Rock County, Luverne Township 2; Yellow Medicine County, Friendship Township 2. Two cerebrospinal meningitis.

Nebraska.

From the State Board of Health of Nebraska, by telegraph, for week ended February 23, 1918:

Smallpox: Omaha, Lincoln, Holdrege, Valentine, Spencer, Wausau, Ord, Grant, Elsie. Scarlet fever: Deshler, Normal. Meningitis: Grand Island, and Nemaha County.

New Jersey.

From Collaborating Epidemiologist Bowen, by telegraph, for week ended February 23, 1918:

Measles unusually prevalent Bridgeton, Bloomfield, Montclair.

Ohio.

From Collaborating Epidemiologist Freeman, by telegraph, for week ended February 23, 1918:

Salem, scarlet fever 22 cases. Piqua, scarlet fever 14 cases. Bairdstown, diphtheria 4 cases. Wellsville, typhoid fever 8 cases. For entire State, meningitis 14 cases, including Dayton 4, Cincinnati 3.

South Carolina.

From Collaborating Epidemiologist Hayne, by telegraph, for week ended February 25, 1918:

Epidemic meningitis, 25 cases week ending 25th.

Virginia.

From Collaborating Epidemiologist Traynham, by telegraph, for week ended February 23, 1918:

Two cases smallpox Alleghany County, one Middlesex. One case cerebrospinal meningitis Buchanan County, 1 Roanoke, 1 Newport News.

RECIPROCAL NOTIFICATION.

Minnesota.

Cases of communicable diseases referred during January, 1918, to other State health departments by department of health of the State of Minnesota.

Disease and locality of notification.	Referred to health authority of—	Why referred.
Diphtheria: Minneapolis Health Department, Hennepin County.	State Hospital, Iowa City, Johnson County, Iowa.	Came to Minneapolis from Iowa, Jan. 21. First symptoms Jan. 19.
Scarlet fever: Minneapolis Health Department, Hennepin County.	Camp Dodge, Iowa. (Officer on 5-day leave, quarantined—unable to return.) Sioux Falls, Minnehaha County, S. Dak.	Came home to Minneapolis Dec. 23 from Camp Dodge. First symptoms Dec. 31. Came from South Dakota Jan. 16, quarantined in Minneapolis Jan. 19. Child who accompanied father was desquamating when he came to Minneapolis.
Smallpox: Minneapolis Health Department, Hennepin County	Rothschild, Marathon County, Wis. Lyle, Mower County, Minn.....	Wife exposed to husband who contracted smallpox at Lyle, Minn., left Minneapolis to visit at Rothschild, Wis. Case quarantined at Minneapolis exposed individuals from several localities at Chicago and Dubuque.
Tuberculosis: Mayo Clinic, Rochester, Olmsted County.	Chicago, Cook County, Ill Dubuque, Dubuque County, Iowa. New York City, New York County, N. Y. Pittsburgh, Allegheny County, Pa.. Denver, Denver County, Colo..... Paris, Edgar County, Ill. Springfield, Sangamon County, Ill.. Moline, Rock Island County, Ill..... Hinsdale, Dupage County, Ill..... Colleta, Whiteside County, Ill..... Eagle, Ada County, Idaho..... Brazil, Clay County, Ind..... Rancroft, Kossuth County, Iowa.... Mason City, Cerro Gordo County, Iowa. Clarksville, Butler County, Iowa.... Wapello, Lousa County, Iowa..... Knoxville, Marion County, Iowa.... Wakefield, Clay County, Kans..... South Range, Houghton County, Mich. Gilman City, Harrison County, Mo.. Edmonds, Stutsman County, N. Dak. Erie Cass County, N. Dak. Rock Lake, Towner County, N. Dak. Fargo, Cass County, N. Dak..... Akron, Summit County, Ohio..... Armour, Douglas County, S. Dak.... Dallas, Dallas County, Texas..... Kendall, Monroe County, Wis..... Marinette, Marinette County, Wis.. Weyerhauser, Rush County, Wis... Moose Jaw, Saskatchewan, Canada.. Prince Albert, Saskatchewan, Canada. Saskatoon, Saskatchewan, Canada.... Blaine Lake, Saskatchewan, Canada.. Danziel, Saskatchewan, Canada..... Badger, Webster County, Iowa.....	11 advanced, 10 moderately advanced, 3 incipient, 4 apparently cured, 3 (stage of disease not given) cases left Mayo Clinic for homes.
Thomas Hospital, Minneapolis, Hennepin County. Bemidji, Beltrami County.	Emo, Ontario, Canada.....	Open case left Thomas Hospital for home. Sputum sent in by Minnesota physician showed tubercle bacilli present.

ANTHRAX.**Massachusetts—Winchester.**

During the month of January, 1918, a case of anthrax was reported in the person of J. T. F., aged 47 years, a tanner, living at No. 36 Middlesex Street, Winchester, Mass.

CEREBROSPINAL MENINGITIS.**Kentucky—Berea.**

During the period from January 17 to February 14, 1918, 16 cases of cerebrospinal meningitis occurred among students attending Berea College.

Virginia—Norfolk.

During the period from February 17 to 21, 1918, 5 cases of cerebrospinal meningitis were notified in Norfolk, Va.

State Reports for January, 1918.

Place.	New cases reported.	Place.	New cases reported.
Louisiana:		Ohio:	
Ascension Parish.....	1	Ashtabula County.....	2
Avoyelles Parish.....	6	Butler County.....	1
Caddo Parish.....	2	Columbiana County.....	1
DeSoto Parish.....	5	Cuyahoga County.....	6
Grant Parish.....	8	Franklin County.....	3
Iberia Parish.....	1	Hamilton County.....	3
Iberville Parish.....	1	Hancock County.....	1
Jefferson Davis Parish.....	1	Jefferson County.....	2
Lafourche Parish.....	1	Lucas County.....	1
Lincoln Parish.....	1	Mahoning County.....	3
Orleans Parish.....	4	Medina County.....	1
Rapides Parish.....	110	Montgomery County.....	3
Red River Parish.....	1	Noble County.....	1
St. James Parish.....	2	Ross County.....	6
St. Landry Parish.....	1	Scioto County.....	1
Tensas Parish.....	1	Seneca County.....	1
Union Parish.....	1	Summit County.....	4
Vermilion Parish.....	6		
Winn Parish.....	1	Total.....	40
Total.....	154		
Minnesota:		Rhode Island:	
Cottonwood County—		Bristol (Town).....	1
Rose Hill Township.....	1	Providence.....	4
Carlton County—		Total.....	5
Barnum.....	1		
Hennepin County—		Vermont:	
Minneapolis.....	3	Chittenden County—	
St. Louis County—		Burlington.....	1
Virginia.....	1		
Total.....	6	Wisconsin:	
New Jersey:		Brown County.....	1
Bergen County.....	2	Douglas County.....	1
Burlington County.....	1	Milwaukee County.....	6
Essex County.....	11	Outagamie County.....	1
Hudson County.....	3	Sheboygan County.....	1
Mercer County.....	1	Trempealeau County.....	1
Passaic County.....	2	Waupaca County.....	1
Union County.....	3	Wood County.....	2
Total.....	23	Total.....	14

CEREBROSPINAL MENINGITIS—Continued.

City Reports for Week Ended Feb. 9, 1918.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	1	.....	Little Rock, Ark.....	1	.....
Alexandria, La.....	1	1	Louisville, Ky.....	2	3
Atlanta, Ga.....	11	3	Macon, Ga.....	8	.....
Baltimore, Md.....	4	2	Medford, Mass.....	1	.....
Birmingham, Ala.....	1	1	Milwaukee, Wis.....	3	2
Boston, Mass.....	2	.....	Minneapolis, Minn.....	.....	1
Bridgeport, Conn.....	1	.....	Nashville, Tenn.....	3	2
Charleston, S. C.....	2	1	Newark, N. J.....	1	1
Charlotte, N. C.....	1	.....	New Britain, Conn.....	.....	1
Chattanooga, Tenn.....	8	1	New Castle, Pa.....	1	.....
Chicago, Ill.....	9	2	New Haven, Conn.....	1	.....
Chillicothe, Ohio.....	.....	1	New Orleans, La.....	3	2
Cincinnati, Ohio.....	1	1	Newport, Ky.....	2	2
Coffeyville, Kans.....	1	1	New York, N. Y.....	22	2
Columbia, S. C.....	4	.....	Norfolk, Va.....	3	3
Columbus, Ohio.....	4	.....	Petersburg, Va.....	1	.....
Covington, Ky.....	1	1	Philadelphia, Pa.....	7	3
Dayton, Ohio.....	.....	2	Pittsburgh, Pa.....	1	1
Fall River, Mass.....	2	1	Rochester, N. Y.....	.....	1
Flint, Mich.....	1	1	St. Louis, Mo.....	2	.....
Galveston, Tex.....	2	.....	San Antonio, Tex.....	3	5
Grand Rapids, Mich.....	1	1	Schenectady, N. Y.....	1	1
Hattiesburg, Miss.....	3	.....	Seattle, Wash.....	1	1
Houston, Tex.....	.....	1	Springfield, Mass.....	.....	1
Jamestown, N. Y.....	1	.....	Troy, N. Y.....	2	.....
Johnstown, Pa.....	1	.....	Waco, Tex.....	2	.....
Kansas City, Kans.....	1	.....	Washington, D. C.....	8	3
Kansas City, Mo.....	4	3	Wilmington, Del.....	1	1
Leavenworth, Kans.....	1	.....	Worcester, Mass.....	1	1
Lima, Ohio.....	1	.....	Yonkers, N. Y.....	1	.....

DIPHTHERIA.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 295.

ERYSIPELAS.

City Reports for Week Ended Feb. 9, 1918.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Allentown, Pa.....	1	.....	Memphis, Tenn.....	2	1
Berkeley, Cal.....	2	.....	Newark, N. J.....	7	1
Boston, Mass.....	.....	4	New Castle, Pa.....	1	.....
Bridgeport, Conn.....	1	.....	New York, N. Y.....	.....	7
Buffalo, N. Y.....	3	.....	Oakland, Cal.....	1	.....
Chicago, Ill.....	18	2	Philadelphia, Pa.....	3	1
Cincinnati, Ohio.....	1	1	Pittsburgh, Pa.....	7	1
Cleveland, Ohio.....	10	2	Pontiac, Mich.....	3	.....
Denver, Colo.....	6	1	Providence, R. I.....	.....	1
Detroit, Mich.....	2	1	Rochester, N. Y.....	6	.....
Duluth, Minn.....	1	.....	St. Joseph, Mo.....	1	.....
Erie, Pa.....	4	1	St. Louis, Mo.....	6	1
Harrisburg, Pa.....	1	.....	Salt Lake City, Utah.....	.....	1
Hartford, Conn.....	2	.....	San Antonio, Tex.....	1	2
Kalamazoo, Mich.....	2	.....	San Diego, Cal.....	1	.....
Kansas City, Mo.....	2	3	San Francisco, Cal.....	4	.....
Lancaster, Pa.....	2	.....	Springfield, Ill.....	1	1
Los Angeles, Cal.....	6	.....	Trenton, N. J.....	1	.....
Louisville, Ky.....	4	2	Wilmington, Del.....	.....	1

LEPROSY.

City Report for Week Ended Feb. 9, 1918.

During the week ended February 9, 1918, one case of leprosy was reported in Portland, Oreg.

MALARIA.

State Reports for January, 1918.

Place.	New cases reported.	Place.	New cases reported.
Louisiana:		Louisiana—Continued.	
Acadia Parish.....	2	Vermilion Parish.....	1
Assumption Parish.....	1	West Feliciana.....	3
Caddo Parish.....	1	Total.....	17
East Baton Rouge Parish.....	1		
East Feliciana Parish.....	2	New Jersey:	
Morehouse Parish.....	1	Burlington County.....	1
Rapides Parish.....	1	Essex County.....	1
St. John Parish.....	1	Sussex County.....	4
St. Martin Parish.....	1	Total.....	6
St. Mary Parish.....	2		

City Reports for Week Ended Feb. 9, 1918.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Birmingham, Ala.....	3	.....	Newark, N. J.....	1	.....
Hagerstown, Md.....	1	.....	New Orleans, La.....	1	.....
Hattiesburg, Miss.....	4	.....	Savannah, Ga.....	.....	1
Macon, Ga.....	1	.....	Waco, Tex.....	2	.....

MEASLES.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 295.

PELLAGRA.

State Reports for January, 1918.

Place.	New cases reported.	Place.	New cases reported.
Louisiana:		Vermont:	
Caldwell Parish.....	1	Rutland County.....	1
Morehouse Parish.....	1		
Orleans Parish.....	3		
Total.....	5		

City Reports for Week Ended Feb. 9, 1918.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Anniston, Ala.....	1	.....	Macon, Ga.....	.....	1
Atlanta, Ga.....	1	Nashville, Tenn.....	1	1
Charleston, S. C.....	1	New York, N. Y.....	.....	1
Fort Smith, Ark.....	2	Portsmouth, Va.....	.....	1
Houston, Tex.....	1	San Antonio, Tex.....	.....	1

PNEUMONIA.

City Reports for Week Ended Feb. 9, 1918.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Allentown, Pa.	1		Los Angeles, Cal.	16	7
Altoona, Pa.	3		Louisville, Ky.	1	22
Anniston, Ala.	1		Lowell, Mass.	2	5
Atlanta, Ga.	1	11	Lynn, Mass.	3	2
Baltimore, Md.	40	26	Manchester, N. H.	5	5
Boston, Mass.	61		Melrose, Mass.	1	
Braddock, Pa.	4		Montgomery, Ala.	1	5
Bridgeport, Conn.	1	16	Newark, N. J.	64	19
Butler, Pa.	1		New Bedford, Mass.	4	8
Cambridge, Mass.	9	5	New Britain, Conn.	3	1
Chattanooga, Tenn.	4	2	Newburyport, Mass.	1	1
Chelsea, Mass.	9	3	New Castle, Pa.	1	
Chicago, Ill.	196	81	Newport, Ky.	9	9
Chillicothe, Ohio	1	1	Norristown, Pa.	1	1
Cleveland, Ohio	27	30	North Adams, Mass.	2	2
Cumberland, Md.	1	1	Norwalk, Conn.	7	5
Detroit, Mich.	7	56	Oakland, Cal.	2	2
Duluth, Minn.	5	5	Pasadena, Cal.	1	
Easton, Pa.	1	1	Petersburg, Va.	4	2
Elmira, N. Y.	2		Philadelphia, Pa.	171	105
Erie, Pa.	6	5	Pittsburgh, Pa.	67	52
Fall River, Mass.	7	1	Pontiac, Mich.	3	1
Fitchburg, Mass.	4	2	Providence, R. I.	1	6
Flint, Mich.	6	5	Reading, Pa.	5	4
Fort Worth, Tex.	20	20	Roanoke, Va.	2	2
Grand Rapids, Mich.	14	3	Rochester, N. Y.	8	5
Hagerstown, Md.	2		Sacramento, Cal.	2	
Harrisburg, Pa.	1	3	St. Joseph, Mo.	6	4
Hattiesburg, Miss.	4		Salem, Mass.	1	
Haverhill, Mass.	2	1	San Antonio, Tex.	2	42
Holyoke, Mass.	2	2	Sandusky, Ohio.	2	
Houston, Tex.	9	10	San Francisco, Cal.	14	15
Jackson, Miss.	5		Schenectady, N. Y.	2	
Jacksonville, Fla.	2	9	Somerville, Mass.	5	
Johnstown, Pa.	5	6	South Bend, Ind.	2	2
Kalamazoo, Mich.	3	2	Springfield, Mass.	11	6
Kansas City, Kans.	2		Springfield, Ohio	1	1
Kansas City, Mo.	19	24	Stockton, Cal.	10	7
Leavenworth, Kans.	2	1	Trenton, N. J.	4	
Lexington, Ky.	3	9	Waco, Tex.	1	
Lincoln, Nebr.	2	2	Wichita, Kans.	5	1
Little Rock, Ark.	4	5	Worcester, Mass.	7	5
Lorain, Ohio	3	1			

POLIOMYELITIS (INFANTILE PARALYSIS).

State Reports for January, 1918.

Place.	New cases reported.	Place.	New cases reported.
Louisiana:		Ohio:	
Jefferson Davis Parish	1	Ashland County	1
Minnesota:		Franklin County	1
Olmsted County—		Hamilton County	1
Kalmar Township	1	Logan County	1
Renville County—		Warren County	1
Boon Lake Township	1	Total	5
Total	2	Wisconsin:	
New Jersey:		Milwaukee County	2
Essex County	1	Vernon County	1
		Waupaca County	1
		Total	4

POLIOMYELITIS (INFANTILE PARALYSIS)—Continued.**City Reports for Week Ended Feb. 9, 1918.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Boston, Mass.....		1	Pittsburgh, Pa.....	1	
East Orange, N. J.....	1		Providence, R. I.....	1	
Haverhill, Mass.....	1		Rochester, N. Y.....		1
New York, N. Y.....	3				

RABIES IN ANIMALS.**City Reports for Week Ended Feb. 9, 1918.**

Place.	Cases.	Place.	Cases.
Detroit, Mich.....	3	New Orleans, La.....	1
Memphis, Tenn.....	2	Winston-Salem, N. C.....	1

SCARLET FEVER.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 295.

SMALLPOX.**Alabama—Mobile.**

On February 23, 1918, smallpox was reported present at Mobile, Ala., where about 20 cases of the disease had occurred.

Missouri—Kansas City.

During the period from February 21 to 26, 1918, 116 cases of smallpox were notified at Kansas City, Mo.

Texas—Eagle Pass—Virulent Smallpox.

During the period of 7 days ended February 25, 1918, 20 new cases of smallpox, with 5 deaths, were notified at Eagle Pass, Tex., making a total of 103 cases, with 23 deaths, reported since October 1, 1917. A total of 73 cases has been reported since January 1, 1918.

State Reports for January, 1918.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Michigan:						
Alcona County—						
Alcona Township.....	1		1			
Black River Township....	8				8	
Caledonia Township.....	9				9	
Harrisville.....	2					2
Alger County—						
Mathias Township.....	5				5	

SMALLPOX—Continued.

State Reports for January, 1918—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Michigan—Continued.						
Allegan County—						
Otsego.....	1				1	
Wayland.....	2					
Alpena County—						
Green Township.....	14				14	
Maple Ridge Township..	1				1	
Sanborn Township.....	15				15	
Alpena.....	15				15	
Barry County—						
Hastings.....	14				14	
Bay County—						
Fraser Township.....	2				2	
Pinconning.....	1				1	
Bay City.....	1				1	
Berrien County—						
Benton Harbor.....	3				3	
Calhoun County—						
Washington Heights....	1				1	
Battle Creek.....	6		1		3	2
Charlevoix County—						
East Jordan.....	1				1	
Cheboygan County—						
Kohler Township.....	9				9	
Waverly Township.....	9				9	
Walker Township.....	1				1	
Chippewa County—						
Sault Ste. Marie.....	1					1
Clinton County—						
Ovid.....	1				1	
Crawford County—						
Grayling.....	1		1			
Delta County—						
Nahma Township.....	1				1	
Eaton County—						
Benton Township.....	4				4	
Genesee County—						
Burton Township.....	1				1	
Forest Township.....	1					1
Vienna Township.....	2				2	
Flint.....	66				56	10
Grand Traverse County—						
Whitewater Township..	10				10	
Hillsdale County—						
Hillsdale Township....	1				1	
Hillsdale.....	4				4	
Huron County—						
Dwight Township.....	2				2	
Fairhaven Township....	6				6	
Lake Township.....	1					1
Lincoln Township.....	1					1
Port Austin Township..	3				3	
Rubicon Township.....	1				1	
Sebawaing Township....	1				1	
Pigeon.....	1				1	
Harbor Beach.....	3				3	
Ingham County—						
White Rock Township..	2			2		
Lansing.....	4				3	1
Ionia County—						
North Plains Township.	1				1	
Iosco County—						
Sherman Township.....	1				1	
Whittmore Township....	1				1	
Isabella County—						
Vernon Township.....	1				1	
Jackson County—						
Jackson.....	11				11	
Kalamazoo County—						
Schoolcraft Township...	2		1			1

SMALLPOX—Continued.

State Reports for January, 1918—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Michigan—Continued.						
Kalkaska County—						
Rapid River Township.	4				4	
Springfield Township.	1				1	
Kent County—						
Caledonia Township.	1				1	
Gratton Township.	1				1	
Walker Township.	10				10	
Grand Rapids.	110			7	103	
Lake County—						
Cherry Valley Township.	5				5	
Pinvia Township.	1				1	
Luther.	7				7	
Lapeer County—						
Attica Township.	3				1	2
Goodland Township.	1			1		
Imlay Township.	3				3	
Metamva Township.	1				1	
Almont.	1			1		
Imlay City.	1				1	
Lenawee County—						
Macon Township.	2					2
Livingston County—						
Brighton.	1				1	
Macomb County—						
Clinton Township.	1				1	
Harrisville Township.	2			1	1	
Lake Township.	1		1			
Sterling Township.	1				1	
Armada.	5				5	
Mount Clemens.	2				2	
Manistee County—						
Dickson Township.	1				1	
Marquette County—						
Marquette.	7				7	
Mason County—						
Summit Township.	1				1	
Ludington.	2				2	
Mecosta County—						
Green Township.	2				2	
Big Rapids.	2				2	
Missaukee County—						
Aetna Township.	1				1	
Bloomfield Township.	1				1	
Caldwell Township.	2				2	
Monroe County—						
Raisenville Township.	1				1	
Monroe.	1		1			
Montcalm County—						
Maple Valley Township.	3				3	
Greenville.	1				1	
Muskegon County—						
Muskegon Township.	6				6	
Muskegon Heights.	21				21	
Muskegon.	28			1	25	2
Newaygo County—						
Sherman Township.	9				7	2
Sheridan Township.	2				2	
Newaygo.	1				1	
Fremont.	9		1		8	
Oakland County—						
Royal Oak Township.	1				1	
Waterford Township.	1				1	
Rochester.	1				1	
Pontiac.	15				15	
Oceana County—						
Crystal Township.	2				2	
Elbridge Township.	1				1	
Ogemaw County—						
Richland Township.	1				1	

SMALLPOX—Continued.

State Reports for January, 1918—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Michigan—Continued.						
Osceola County—						
Hartwick Township.....	3				3	
Sherman Township.....	4				4	
Otsego County—						
Dover Township.....	1					1
Vanderbilt.....	1				1	
Ottawa County—						
Holland Township.....	1					1
Talmadge Township.....	1				1	
Wright Township.....	1				1	
Presque Isle County—						
Belknap Township.....	2				2	
Saginaw County—						
Tittabawassee Township	1				1	
St. Clair County—						
Brockway Township....	1				1	
Berlin Township.....	1				1	
China Township.....	5				5	
Clyde Township.....	4				4	
Columbus Township.....	1		1			
Grant Township.....	1		1			
Kimball Township.....	2					2
Port Huron Township...	8				8	
St. Clair Township.....	2				2	
Marine City.....	2		1	1		
Port Huron.....	17				17	
St. Clair.....	7				7	
Sanilac County—						
Bridgehampton Town-						
ship.....	2				2	
Delaware Township.....	1				1	
Hartwick Township.....	2				2	
Speaker Township.....	6				6	
Wheatland Township...	11				11	
Brown City.....	1				1	
Shiawassee County—						
Grand.....	1				1	
Tuscola County—						
Fairgrove Township....	3				2	1
Vassar Township.....	1				1	
Fairgrove.....	2				2	
Reese.....	1				1	
Vassar.....	1				1	
Van Buren County—						
Breedsville Township...	1				1	
Washtenaw County—						
Saline Township.....	1			1		
Ypsilanti Township.....	1		1			
Ann Arbor.....	5				5	
Wayne County—						
Greenfield Township....	2					2
Romulus Township.....	3				3	
Springwells Township...	5				5	
Hamtramck.....	5				5	
Highland Park.....	28			1	19	8
Northville.....	1					1
Oakwood.....	1				1	
Redford.....	16				16	
St. Clair Heights.....	18				18	
Detroit.....	338					338
Wyandotte.....	1				1	
Wexford County—						
Harriette.....	1				1	
Total.....	1,069		11	16	632	390

SMALLPOX—Continued.

State Reports for January, 1918—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Minnesota:						
Cass County—						
Pine River Township...	1					1
Clay County—						
Elmwood Township...	2				2	
Cottonwood County—						
Windom.....	1				1	
Crow Wing County—						
Brainerd.....	16			1	15	
Dakota County—						
Lakeville Township...	1				1	
Douglas County—						
Alexandria.....	3				3	
Osakis.....	4				4	
Ida Township.....	5				5	
Le Grande Township...	2				2	
Fillmore County—						
Beaver Township...	1				1	
Bloomfield Township...	2				1	1
Forrestville Township...	1					1
Freeborn County—						
Moscow Township....	4				4	
Hennepin County—						
Minneapolis.....	90			11	79	
St. Louis Park.....	2			1	1	
Maple Grove Township...	1				1	
Minnetonka Township..	1				1	
Isanti County—						
Springvale Township...	1				1	
Kanabec County—						
Grass Lake Township...	1				1	
Kittson County—						
Hallock.....	1				1	
Karlstad.....	1				1	
Deerwood Township...	1				1	
Hallock Township....	2				2	
Norway Township.....	1				1	
Pelan Township.....	1				1	
St. Joseph Township...	1				1	
Springbrook Township..	1				1	
Lyon County—						
Marshall.....	1				1	
Morrison County—						
Little Falls.....	2				2	
Murray County—						
Slayton.....	1				1	
Olmsted County—						
Rochester.....	2				2	
Ottertail County—						
Aurdal Township.....	6				6	
Pipestone County—						
Jasper.....	1			1		
Polk County—						
Fisher.....	1			1		
Ramsey County—						
White Bear.....	1				1	
Rice County—						
Faribault.....	1				1	
Northfield.....	6			3	3	
Roseau County—						
Greenbush.....	1				1	
Roseau.....	4				1	3
Jadis Township.....	1				1	
Lind Township.....	1				1	
St. Louis County—						
Duluth.....	3			1	2	
Scott County—						
New Market.....	8				8	
Stearns County—						
Sauk Center.....	5				5	
Crow Lake Township...	1				1	

SMALLPOX—Continued.

State Reports for January, 1918—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Minnesota—Continued.						
Todd County—						
Little Sauk Township...	2				2	
West Union Township...	1				1	
Traverse County—						
Dumont.....	1				1	
Croke Township.....	3				3	
Parnell Township.....	1				1	
Washington County—						
Oakdale Township.....	1				1	
Winona County—						
Utica.....	4				4	
Winona.....	3				3	
Yellow Medicine County—						
Hazel Run Township...	1				1	
Total.....	211			19	186	6
Ohio:						
Adams County.....	82				63	19
Allen County.....	28				25	3
Athens County.....	18				17	1
Auglaize County.....	13				2	11
Belmont County.....	6				6	
Brown County.....	19				19	
Butler County.....	40			1	33	6
Champaign County.....	1					1
Clark County.....	6				6	
Clinton County.....	2				2	
Columbiana County.....	10			2	7	1
Coshocton County.....	2				1	1
Crawford County.....	1				1	
Cuyahoga County.....	145				103	42
Darke County.....	7				3	4
Defiance County.....	4				1	3
Delaware County.....	1					1
Erie County.....	2				2	
Fairfield County.....	7			2	5	
Franklin County.....	72			2	70	
Fulton County.....	10				6	4
Galia County.....	2					2
Greene County.....	116			1	103	12
Guernsey County.....	36				22	14
Hamilton County.....	45		1	1	42	1
Hancock County.....	32			1	16	15
Harrison County.....	10			1	8	1
Henry County.....	202		1	10	68	123
Highland County.....	11				10	1
Hocking County.....	11				11	
Holmes County.....	29			1	16	12
Huron County.....	2				2	
Jackson County.....	47					47
Lawrence County.....	7				7	
Licking County.....	9			1	3	5
Logan County.....	13				12	1
Lorain County.....	42			2	38	2
Lucas County.....	59			3	42	14
Mahoning County.....	15			1	12	2
Medina County.....	8				8	
Mercer County.....	34				18	16
Miami County.....	18			4	14	
Montgomery County.....	32				30	2
Morrow County.....	4				1	3
Muskingum County.....	5				4	1
Ottawa County.....	2					2
Paulding County.....	16					16
Perry County.....	6				1	5
Pickaway County.....	61			3	36	22
Pike County.....	1				1	
Portage County.....	18				12	6
Preble County.....	9				6	3

SMALLPOX—Continued.

State Reports for January, 1918—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Ohio—Continued.						
Putnam County.....	1	.....	.....	.....	1	.....
Richland County.....	1	.....	.....	.....	.....	1
Ross County.....	4	.....	.....	.....	.....	4
Sandusky County.....	1	.....	.....	.....	1	.....
Scioto County.....	109	.....	.....	1	106	2
Seneca County.....	2	.....	.....	.....	2	.....
Shelby County.....	64	.....	.....	1	18	45
Stout County.....	35	.....	.....	1	13	21
Summit County.....	243	.....	.....	3	55	185
Trumbull County.....	12	.....	1	.....	10	1
Tuscarawas County.....	27	.....	.....	.....	6	21
Union County.....	2	.....	.....	.....	.....	2
Van Wert County.....	2	.....	.....	.....	.....	2
Vinton County.....	2	.....	.....	1	.....	1
Warren County.....	16	.....	.....	.....	11	5
Washington County.....	1	.....	.....	.....	.....	1
Wayne County.....	43	.....	.....	.....	6	37
Williams County.....	4	.....	.....	.....	3	1
Wood County.....	9	.....	.....	.....	.....	9
Wyandot County.....	1	.....	.....	.....	1	.....
Total.....	1,957	.....	3	43	1,148	763
Wisconsin:						
Ashland County.....	17	.....	.....	3	14	.....
Barron County.....	2	.....	.....	.....	2	.....
Buffalo County.....	26	.....	2	10	7	7
Cadumet County.....	1	.....	.....	.....	1	.....
Clark County.....	1	.....	.....	.....	1	.....
Columbia County.....	4	.....	.....	.....	.....	4
Crawford County.....	25	.....	17	.....	8	.....
Dane County.....	18	.....	17	.....	.....	1
Dodge County.....	1	.....	.....	.....	1	.....
Douglas County.....	4	.....	.....	.....	3	1
Dunn County.....	21	.....	1	1	18	1
Eau Claire County.....	9	.....	.....	.....	9	.....
Fond du Lac County.....	7	.....	4	.....	3	.....
Grant County.....	4	.....	3	.....	1	.....
Green County.....	4	.....	.....	.....	4	.....
Jackson County.....	1	.....	.....	.....	1	.....
Jefferson County.....	2	.....	1	.....	1	.....
Kenosha County.....	1	.....	.....	1	.....	.....
La Crosse County.....	48	.....	.....	.....	48	.....
La Fayette County.....	1	.....	.....	.....	1	.....
Lincoln County.....	27	.....	13	9	5	.....
Manitowoc County.....	7	.....	2	.....	.....	.....
Marathon County.....	4	.....	1	2	.....	1
Marquette County.....	1	.....	.....	.....	.....	1
Milwaukee County.....	43	.....	4	.....	3	36
Monroe County.....	6	.....	1	4	.....	1
Pepin County.....	22	.....	.....	.....	9	13
Racine County.....	4	.....	4	.....	.....	.....
Richland County.....	30	.....	.....	.....	30	.....
Rock County.....	72	2	.....	1	68	3
Sauk County.....	22	.....	.....	.....	22	.....
Sawyer County.....	1	.....	.....	.....	.....	1
Trempealeau County.....	7	.....	1	.....	6	.....
Vernon County.....	8	.....	2	1	5	.....
Waukesha County.....	3	.....	.....	.....	3	.....
Winnebago County.....	5	.....	.....	1	4	.....
Total.....	459	2	73	33	283	70

SMALLPOX—Continued.

Miscellaneous State Reports.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Louisiana (Jan. 1-31):			Nebraska (Jan. 1-31)—Contd.		
Ascension Parish.....	1	.....	Keith County.....	3	.....
Caddo Parish.....	10	.....	Knox County.....	1	.....
Calcasieu Parish.....	3	.....	Lancaster County.....	21	.....
East Carroll Parish.....	5	.....	Lincoln County.....	5	.....
Iberville Parish.....	1	.....	Madison County.....	36	.....
Lincoln Parish.....	1	.....	Merrick County.....	1	.....
Morehouse Parish.....	4	.....	Morrill County.....	5	.....
Orleans Parish.....	32	.....	Nance County.....	5	.....
Rapides Parish.....	7	.....	Nemaha County.....	1	.....
Ouachita Parish.....	1	.....	Nuckolls County.....	17	.....
St. Mary Parish.....	5	.....	Otoe County.....	4	.....
Tangipahoa Parish.....	1	.....	Phelps County.....	7	.....
Terrebonne Parish.....	1	.....	Pierce County.....	33	.....
Total.....	72	.....	Platte County.....	12	.....
Nebraska (Jan. 1-31):			Polk County.....	6	.....
Antelope County.....	4	.....	Redwillow County.....	1	.....
Boone County.....	2	.....	Richardson County.....	6	.....
Buffalo County.....	1	.....	Saline County.....	2	.....
Burt County.....	3	.....	Saunders County.....	4	.....
Butler County.....	14	.....	Sheridan County.....	3	.....
Cass County.....	13	.....	Stanton County.....	1	.....
Cherry County.....	6	.....	Thayer County.....	3	.....
Cheyenne County.....	6	.....	Thurston County.....	2	.....
Clay County.....	5	.....	Valley County.....	6	.....
Collax County.....	5	.....	Scotts Bluff County.....	4	.....
Custer County.....	1	.....	Webster County.....	2	.....
Dakota County.....	1	.....	Wheeler County.....	23	.....
Dawson County.....	3	.....	Total.....	449	.....
Deuel County.....	11	.....	New Jersey (Jan. 1-31):		
Dixon County.....	10	.....	Essex County.....	1	.....
Dodge County.....	6	.....	Vermont (Jan. 1-31):		
Douglas County.....	130	.....	Bennington County.....	1	.....
Frontier County.....	4	.....	Caledonia County.....	1	.....
Furnas County.....	3	.....	Orleans County.....	3	.....
Hitchcock County.....	1	.....	Total.....	5	.....
Holt County.....	2	.....		
Johnson County.....	3	.....		
Kearney County.....	1	.....		

City Reports for Week Ended Feb. 9, 1918.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	18	.....	Duluth, Minn.....	2	.....
Alexandria, La.....	1	.....	Erie, Pa.....	5	.....
Alton, Ill.....	15	.....	Evansville, Ind.....	3	.....
Ann Arbor, Mich.....	1	.....	Flint, Mich.....	11	.....
Anniston, Ala.....	9	.....	Fort Smith, Ark.....	2	.....
Atlanta, Ga.....	1	.....	Fort Wayne, Ind.....	9	.....
Austin, Tex.....	1	.....	Fort Worth, Tex.....	29	.....
Battle Creek, Mich.....	1	.....	Galesburg, Ill.....	1	.....
Berlin, N. H.....	4	.....	Grand Rapids, Mich.....	10	.....
Birmingham, Ala.....	25	.....	Hammond, Ind.....	3	.....
Butte, Mont.....	16	.....	Harrisburg, Pa.....	1	.....
Charlotte, N. C.....	3	.....	Hattiesburg, Miss.....	19	.....
Chattanooga, Tenn.....	2	.....	Houston, Tex.....	2	.....
Chicago, Ill.....	44	1	Indianapolis, Ind.....	86	.....
Cincinnati, Ohio.....	7	.....	Jackson, Mich.....	3	.....
Cleveland, Ohio.....	57	.....	Jackson, Miss.....	1	.....
Coffeyville, Kans.....	9	.....	Jacksonville, Fla.....	2	.....
Colorado Springs, Colo.....	2	.....	Jamestown, N. Y.....	1	.....
Columbus, Ohio.....	10	.....	Johnstown, Pa.....	1	.....
Council Bluffs, Iowa.....	17	1	Kansas City, Kans.....	58	.....
Covington, Ky.....	4	.....	Kansas City, Mo.....	219	.....
Dallas, Tex.....	8	.....	Knoxville, Tenn.....	8	.....
Danville, Ill.....	1	.....	Kokomo, Ind.....	7	.....
Davenport, Iowa.....	2	.....	La Crosse, Wis.....	15	.....
Dayton, Ohio.....	4	.....	Leavenworth, Kans.....	1	.....
Denver, Colo.....	24	.....	Lima, Ohio.....	16	.....
Des Moines, Iowa.....	25	.....	Lincoln, Nebr.....	8	.....
Detroit, Mich.....	75	.....	Little Rock, Ark.....	36	.....
Dubuque, Iowa.....	3	.....	Lorain, Ohio.....	4	.....

SMALLPOX—Continued.

City Reports for Week Ended Feb. 9, 1918—Continued.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Los Angeles, Cal.	1		Racine, Wis.	2	
Louisville, Ky.	2		Roanoke, Va.	1	
Madison, Wis.	1		Saginaw, Mich.	1	
Memphis, Tenn.	25		St. Joseph, Mo.	19	
Milwaukee, Wis.	3		St. Louis, Mo.	17	
Minneapolis, Minn.	26		Salt Lake City, Utah	24	
Mobile, Ala.	1		San Antonio, Tex.	1	
Montgomery, Ala.	13		Sandusky, Ohio.	1	
Muncie, Ind.	5		San Francisco, Cal.	2	
Muskegon, Mich.	6		Seattle, Wash.	7	
Muskogee, Okla.	5		Sioux City, Iowa.	12	
Nashville, Tenn.	1		South Bend, Ind.	4	
New Orleans, La.	9		Springfield, Ill.	5	
Newport, Ky.	1		Superior, Wis.	1	
New York, N. Y.	1		Terre Haute, Ind.	3	
Oklahoma City, Okla.	17	1	Toledo, Ohio.	15	
Omaha, Neb.	41		Waco, Tex.	1	
Pontiac, Mich.	6		Wheeling, W. Va.	1	
Portland, Oreg.	1		Wichita, Kans.	15	
Quincy, Ill.	13				

TETANUS.

City Reports for Week Ended Feb. 9, 1918.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Chicago, Ill.		1	New York, N. Y.	1	1
El Paso, Tex.	1	1	Portsmouth, Va.		1
Lincoln, Neb.	1		St. Louis, Mo.	1	
Memphis, Tenn.		1	San Diego, Cal.		1
New Orleans, La.		1			

TUBERCULOSIS.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 295.

TYPHOID FEVER.

State Reports for January, 1918.

Place.	New cases reported.	Place.	New cases reported.
Louisiana:		Michigan—Continued.	
Caddo Parish	1	Gratiot County—	
Concordia Parish	1	Breckenridge	1
Franklin Parish	1	Ingham County—	
Iberville Parish	3	Lawrence	1
Lafourche Parish	1	Ionia County—	
Orleans Parish	9	Lake Odessa	1
St. Mary Parish	1	Isabella County—	
Vermillion Parish	2	Mount Pleasant	1
West Carroll Parish	1	Kalamazoo County—	
Total	20	Kalamazoo	1
Michigan:		Kent County—	
Alpena County—		Lowell	3
Alpena	1	Grand Rapids	8
Antrim County—		Lapeer County—	
Banks Township	1	Arcadia Township	1
Bay County—		Leelanau County—	
Bay City	2	Elmwood Township	1
Genesee County—		Marquette County—	
Flint	2	Marquette	3
		Mecosta County—	
		Big Rapids	2

TYPHOID FEVER—Continued.

State Reports for January, 1918—Continued.

Place.	New cases reported.	Place.	New cases reported.
Michigan—Continued.		New Jersey—Continued.	
Menominee County—		Burlington County.....	3
Menominee.....	1	Camden County.....	6
Misaukee County—		Cape May County.....	2
Richland Township.....	1	Essex County.....	10
Monroe County—		Gloucester County.....	8
Bedford Township.....	3	Hudson County.....	1
Oakland County—		Hunterdon County.....	1
Pontiac.....	1	Mercer County.....	4
Saginaw County—		Monmouth County.....	3
Saginaw.....	4	Morris County.....	2
Van Buren County—		Passaic County.....	2
Port Huron.....	1	Somerset County.....	3
Washtenaw County—		Sussex County.....	1
Ann Arbor.....	1	Warren County.....	1
Wayne County—			
Ford.....	3	Total.....	50
Total.....	44	Ohio:	
Minnesota:		Ashtabula County.....	4
Anoka County—		Athens County.....	4
Anoka.....	1	Belmont County.....	4
Beltrami County—		Champaign County.....	1
Baudette.....	1	Clark County.....	19
Chisago County—		Columbiana County.....	5
Center City.....	1	Cuyahoga County.....	11
Rush City.....	1	Franklin County.....	3
Hennepin County—		Fulton County.....	9
Excelsior.....	1	Guernsey County.....	1
Minneapolis.....	16	Hamilton County.....	3
Le Sueur County—		Henry County.....	1
Kasota Township.....	2	Logan County.....	2
Marshall County—		Lucas County.....	5
Oslo.....	1	Mahoning County.....	3
Nicollet County—		Monroe County.....	1
St. Peter.....	1	Muskingum County.....	4
Olmsted County—		Paulding County.....	2
Rochester.....	1	Portage County.....	6
Otter Tail County—		Ross County.....	2
Fergus Falls.....	1	Scioto County.....	2
Ramsey County—		Summit County.....	5
St. Paul.....	2	Trumbull County.....	3
White Bear.....	1	Warren County.....	1
Red Lake County—		Washington County.....	2
Red Lake Falls.....	1	Williams County.....	1
River Township.....	1	Wood County.....	3
Redwood County—		Total.....	107
Wabasso.....	1	Rhode Island:	
Rice County—		Providence.....	3
Faribault.....	1	Tiverton (town).....	1
Wells Township.....	1	Total.....	4
St. Louis County—		Vermont:	
Aurora.....	2	Addison County.....	5
Duluth.....	2	Bennington County.....	1
Virginia.....	1	Orange County.....	1
Morse Township.....	1	Total.....	7
Stearns County—		Wisconsin:	
St. Cloud.....	1	Brown County.....	2
Wabasha County—		Eau Claire County.....	1
Mazeppa Township.....	1	Forest County.....	1
Washington County—		Manitowoc County.....	1
Stillwater.....	1	Marathon County.....	7
Total.....	44	Milwaukee County.....	11
Nebraska:		Price County.....	1
Antelope County.....	1	Racine County.....	1
Cedar County.....	1	Sheboygan County.....	4
Douglas County.....	1	Waupaca County.....	1
Lancaster County.....	1	Winnebago County.....	1
Total.....	4	Wood County.....	1
New Jersey:		Total.....	32
Atlantic County.....	1		
Bergen County.....	2		

TYPHOID FEVER—Continued.**City Reports for Week Ended Feb. 9, 1918.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Albany, N. Y.	3		Minneapolis, Minn.	6	
Ann Arbor, Mich.	1		Moline, Ill.	1	1
Atlantic City, N. J.	1		Nashville, Tenn.	1	
Baltimore, Md.	2		New Bedford, Mass.	2	1
Boston, Mass.	2	1	New Orleans, La.		2
Buffalo, N. Y.	1		New York, N. Y.	30	4
Chicago, Ill.	4		Petersburg, Va.		1
Dayton, Ohio.	1	1	Philadelphia, Pa.	8	3
Detroit, Mich.	2		Pittsburgh, Pa.	4	1
East Chicago, Ind.	1	1	Rochester, N. Y.	1	
Elmira, N. Y.		1	Sacramento, Cal.	1	1
Fall River, Mass.	1		St. Louis, Mo.	4	
Fitchburg, Mass.	2		Salt Lake City, Utah.	1	
Galesburg, Ill.	1	2	San Antonio, Tex.	1	2
Hammond, Ind.	3		San Francisco, Cal.	1	1
Houston, Tex.	1		Seattle, Wash.	1	
Jersey City, N. J.	1		Stockton, Cal.	2	
Kansas City, Mo.	3		Syracuse, N. Y.	1	1
Lancaster, Pa.	1		Toledo, Ohio.	1	1
Lawrence, Mass.	2		Trenton, N. J.	2	1
Lexington, Ky.	1	1	Washington, D. C.	2	1
Los Angeles, Cal.	2		Wilkesburg, Pa.	2	1
Louisville, Ky.	1	1	Wilmington, Del.	1	
Milwaukee, Wis.	4	2	Winston-Salem, N. C.		1

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.**State Reports for January, 1918.**

State.	Cases reported.			State.	Cases reported.		
	Diphtheria.	Measles.	Scarlet fever.		Diphtheria.	Measles.	Scarlet fever.
Louisiana	84	989	31	Ohio	556	997	861
Michigan	587	672	1,048	Rhode Island	57	55	45
Minnesota	313	456	325	Vermont	17	29	44
Nebraska	55	286	171	Wisconsin	241	1,122	715
New Jersey	420	2,423	407				

City Reports for Week Ended Feb. 9, 1918.

City.	Population as of July 1, 1916. (Estimated by U. S. Census Bureau.)	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Over 500,000 inhabitants:										
Baltimore, Md.	589,621	285	18	2	129	1	7		51	26
Boston, Mass.	756,476	312	92	6	125	1	56	2	53	25
Chicago, Ill.	2,497,722	692	103	18	51	1	47		409	77
Cleveland, Ohio.	674,673	215	60	7	12	1	5		35	23
Detroit, Mich.	571,784	237	60	7	25	2	33	1	39	21
Los Angeles, Cal.	503,812	170	14		177	1	17		44	26
New York, N. Y.	5,662,841	1,047	22	4	264	26	579	5	1,538	208
Philadelphia, Pa.	1,709,518	729	57	12	148	2	25	1	107	93
Pittsburgh, Pa.	579,090	232	10	1	171	3	3		25	9
St. Louis, Mo.	757,309	247	47	2	63		24		34	16
From 300,000 to 500,000 inhabitants:										
Buffalo, N. Y.	468,558	186	7	4	22	1	11	1	35	21
Cincinnati, Ohio.	410,476	157	10	1	16	2	8		24	22
Jersey City, N. J.	306,345		12		46		12		6	
Milwaukee, Wis.	438,535	98	7	1	105		40		17	8

DIPHThERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended February 9, 1918—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
From 300,000 to 500,000 inhabit- ants.—Continued.											
Minneapolis, Minn.	363,454		17		29		22	1	22	12	
Newark, N. J.	408,894	131	36	2	128		10		40	15	
New Orleans, La.	371,747	183	6		113				44	33	
San Francisco, Cal.	463,516	134	15	1	51		16		33	10	
Seattle, Wash.	348,639		5		212		8		12	3	
Washington, D. C.	363,980	167	9	1	281	3	41		16	13	
From 200,000 to 300,000 inhabit- ants:											
Columbus, Ohio.	214,878	62			27		28		11	6	
Denver, Colo.	260,800	77	2		182	1	26			12	
Indianapolis, Ind.	271,708	95	20		46	1	48		12	3	
Kansas City, Mo.	297,847	110	9	3	190	3	61			11	
Louisville, Ky.	238,910	121	4		34		3		4	10	
Portland, Oreg.	295,463	55	7		30		12			5	
Providence, R. I.	254,900	86	11	4	17	1	5		1	7	
Rochester, N. Y.	256,417	79	11		29	1	22	1	21	6	
From 100,000 to 200,000 inhabit- ants:											
Albany, N. Y.	104,190		7		11				1		
Atlanta, Ga.	190,558	78	8		10		3			4	
Birmingham, Ala.	181,762	88	1		122	4	6		9	1	
Bridgeport, Conn.	121,579	65	8	1	5	1	4	1	4	3	
Cambridge, Mass.	112,981	49	8		28	3	2		5	3	
Camden, N. J.	106,233		5		30				6		
Dallas, Tex.	124,527	49	2	2	94	1	2	1	4	6	
Dayton, Ohio.	127,224	62			19		9		6	2	
Des Moines, Iowa.	101,596						12				
Fall River, Mass.	128,336	35	8	1	9		6		9	3	
Fort Worth, Tex.	104,562	50	2		4	1	1		2	2	
Grand Rapids, Mich.	128,291	41	9	2	10		1		5		
Hartford, Conn.	110,900	55	5		2		5		8	3	
Houston, Tex.	112,307	47	4		11				3	5	
Lawrence, Mass.	100,560	35	3		19		1		6	6	
Lowell, Mass.	113,245	45	3		1		3		5	4	
Lynn, Mass.	102,423	29	2		2		5		3	4	
Memphis, Tenn.	148,905	70	2		14	2	2		12	10	
Nashville, Tenn.	117,057	48			13				1	9	
New Bedford, Mass.	118,158	45	4		13		2		8	7	
New Haven, Conn.	140,685	55	3		3		2		4	3	
Oakland, Cal.	198,604	26	1		26		4		6	4	
Omaha, Nebr.	165,470	38	7		54		7			1	
Reading, Pa.	109,381	26	1		1		1		3	1	
Richmond, Va.	156,687	61	3		64	1	7		9	9	
Salt Lake City, Utah.	117,390	35	1		52		13			1	
San Antonio, Tex.	123,831	121	2		12	1	1			16	
Scranton, Pa.	146,811	51	3		34		3		1	4	
Springfield, Mass.	106,942	40	7	1	34		4		2	1	
Syracuse, N. Y.	155,624	50	17	3	95	5	23		3		
Tacoma, Wash.	112,770		2		2		8				
Toledo, Ohio.	191,554	66	2		22	1	10			2	
Trenton, N. J.	111,593	36	6	1	12		1		5	5	
Worcester, Mass.	163,314	57	3	1	7	1	6		6	2	
From 50,000 to 100,000 inhabit- ants:											
Akron, Ohio.	85,625		9		11		15		12		
Allentown, Pa.	63,505	22	5	1	43						
Altoona, Pa.	58,659		2		1		1		1		
Atlantic City, N. J.	57,600	10			5				2	1	
Bayonne, N. J.	69,893		1		14		2		3		
Berkeley, Cal.	57,633	10	1		2		1			1	
Binghamton, N. Y.	53,973	25	1		25		7		11	1	
Canton, Ohio.	60,852	20			1		1		1	2	
Charleston, S. C.	60,734	32		1						2	
Chattanooga, Tenn.	60,075		2		10		3		3	2	
Covington, Ky.	57,144	34	2		1		2		3	4	
Duluth, Minn.	94,495	20			53				5		
El Paso, Tex.	63,705	47			19		1			12	
Erie, Pa.	75,195	47	7	1	3		32		14	2	
Evansville, Ind.	76,078	26	2		10		3		6	3	
Flint, Mich.	54,772	20	1	1	1		5	1	7		

DIPHThERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended Feb. 9, 1918—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 50,000 to 100,000 inhabi- tants—Continued.										
Fort Wayne, Ind.	76,183	25	3				3		1	2
Harrisburg, Pa.	72,015	28	7	1	5		2		2	
Hoboken, N. J.	77,214	19				1	2			2
Holyoke, Mass.	65,286		1		8					2
Johnstown, Pa.	68,529	28	2				11		1	1
Kansas City, Kans.	99,437		1		40	1	6		1	1
Lancaster, Pa.	50,853		1		16		1			
Little Rock, Ark.	57,343	21			10	1				3
Malden, Mass.	51,155	12	1		10					1
Manchester, N. H.	78,283		4		8		8		7	3
Mobile, Ala.	58,221	22			6					3
New Britain, Conn.	53,794	15	1				1			
Norfolk, Va.	89,612		3		27		2			9
Oklahoma City, Okla.	92,943	18	1		15		1			
Passaic, N. J.	71,744	20	2		1		2		1	3
Pawtucket, R. I.	59,411	13			2		2			
Portland, Me.	63,867	19	1	1	32					3
Rockford, Ill.	55,185	13	1		9		1			
Sacramento, Cal.	66,895	25			28		1			1
Saginaw, Mich.	55,642	28	1				2		2	
St. Joseph, Mo.	85,236	32	2	1	60		2		1	3
San Diego, Cal.	53,330		2		260		5		14	
Savannah, Ga.	68,805	38	3	1	24				2	3
Schenectady, N. Y.	99,519	18			5		1		6	3
Sioux City, Iowa.	57,078		1				20			
Somerville, Mass.	87,099	27	2	1	42		3		3	
South Bend, Ind.	68,946	16	1		6		1			2
Springfield, Ill.	61,120	24	1		7					
Springfield, Ohio.	51,550	15			5		1		6	1
Terre Haute, Ind.	66,083	14	3		22		1		2	
Troy, N. Y.	77,916	35	1		1		2			2
Wichita, Kans.	70,722		1		134		3			
Wilkes-Barre, Pa.	76,776	18	2		23		5		4	
Wilmington, Del.	94,265	44			5					5
Yonkers, N. Y.	99,838	115	4		4		7			
From 25,000 to 50,000 inhabitants:										
Alameda, Cal.	27,732	4	2		6		1		6	2
Auburn, N. Y.	37,385	9	2		5		2			
Austin, Tex.	34,814	19	2							3
Battle Creek, Mich.	29,480		6		16		2			
Brookline, Mass.	32,730	12	5		15		1		1	
Butler, Pa.	27,682	13	2		9					1
Butte, Mont.	43,425		1		5		8			
Charlotte, N. C.	39,823		1		18				2	
Chelsea, Mass.	46,102	17			7		2		1	2
Chicopee, Mass.	29,319	3			1				2	1
Colorado Springs, Colo.	32,971	6			18		1		5	2
Columbia, S. C.	34,611		1		2				3	
Council Bluffs, Iowa.	31,484				3		2			
Cranston, R. I.	25,987						1		1	2
Cumberland, Md.	26,074	4	1							
Danville, Ill.	32,261	11	2		1					
Davenport, Iowa.	48,811						10	1		
Dubuque, Iowa.	39,873				8					3
Durham, N. C.	25,061	11	3		6					3
East Chicago, Ind.	28,743	16								3
Easton, Pa.	30,530	19			13				1	2
East Orange, N. J.	42,458	9	1		9				1	
Elgin, Ill.	28,203	9			3					
Elmira, N. Y.	38,120	7	2		20		2		2	2
Everett, Mass.	39,233	10	3		2				2	1
Everett, Wash.	35,486	7							1	
Fitchburg, Mass.	41,781	9	1		9				1	1
Fort Smith, Ark.	28,638		1		5					
Galveston, Tex.	41,863	13	1				1			1
Green Bay, Wis.	29,353	14								
Hagerstown, Md.	25,679				5		3			
Hammond, Ind.	26,171	10	1	1	1		2			
Haverhill, Mass.	48,477	14			39	1			6	
Jackson, Mich.	35,393	14	1		7		31	1	1	

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended Feb. 9, 1918—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
From 25,000 to 50,000 inhabit- ants—Continued.											
Jackson, Miss.	29,737				10				1		
Jamestown, N. Y.	36,580	14	4						2	1	
Kalamazoo, Mich.	48,886	17	4	1	7		1		3		
Kenosha, Wis.	31,576		4				9				
Kingston, N. Y.	26,771	10									
Knoxville, Tenn.	38,676				13		2				
La Crosse, Wis.	31,677	12	2				2				
Lexington, Ky.	41,097	28			26					1	
Lima, Ohio	35,384	12	1		2		5				
Lincoln, Nebr.	46,515	20	1		2		4			1	
Long Beach, Cal.	27,587	16	1		31		2		2		
Lorain, Ohio.	36,964	1					1				
Lynchburg, Va.	32,940	15			2					1	
Macon, Ga.	45,757	46	1		22		4			2	
Madison, Wis.	30,699	11	2		10		2				
McKeesport, Pa.	47,521		3		24				1	5	
Medford, Mass.	26,234	9	1		7		1		1	1	
Moline, Ill.	27,451	12	2		2		3				
Montclair, N. J.	26,318	3			101				1	1	
Montgomery, Ala.	43,285	13	1		43				7	2	
Mount Vernon, N. Y.	37,009	9	4		51		2				
Muncie, Ind.	25,424		2		7				2		
Muskegon, Mich.	26,100	14									
Muskogee, Okla.	44,218		2		20		2				
Newburgh, N. Y.	29,603	7			1				1	2	
New Castle, Pa.	41,133		1		12		2				
Newport, Ky.	31,927	15	1								
Newport, R. I.	30,108	3	1		2		1				
Newton, Mass.	43,715	6	2		23				2		
Niagara Falls, N. Y.	37,353	15	2		1		5		2	1	
Norristown, Pa.	31,401	9					1				
Oak Park, Ill.	26,654	14			5		4				
Ogden, Utah.	31,404		1		19		3				
Orange, N. J.	33,080	9			20						
Pasadena, Cal.	46,450	12			29		2			1	
Perth Amboy, N. J.	41,185	13	2	1	4				1	1	
Petersburg, Va.	25,582	22			4	1			1	3	
Pittsfield, Mass.	38,629	20			4				4		
Portsmouth, Va.	39,651	11			10		2				
Quincy, Ill.	36,798	17	2		4					2	
Quincy, Mass.	38,136	15	3		16		1		1	1	
Racine, Wis.	46,486	20	1		15		3		6	2	
Roanoke, Va.	43,284	15	1		8				7		
Rock Island, Ill.	28,926	12			4		2				
Salem, Mass.	48,562	17	1		16					3	
San Jose, Cal.	38,902				6						
Steubenville, Ohio	27,445	11	1		2		1				
Stockton, Cal.	35,358	10			23		1		9	5	
Superior, Wis.	46,226	9			14		1			2	
Taunton, Mass.	36,283	9	1		1		1		2	1	
Waco, Tex.	33,385		3		6						
Waltham, Mass.	30,570	10			6		1		2		
Watertown, N. Y.	29,894				33				1	1	
West Hoboken, N. J.	43,139	3	1		2					2	
Wheeling, W. Va.	43,377	17	1						1	1	
Wilmington, N. C.	29,892	21								2	
Winston-Salem, N. C.	31,155	22			40				8		
Zanesville, Ohio.	30,863	11								2	
From 10,000 to 25,000 inhabitants:											
Alexandria, La.	17,846	6			2		1				
Alton, Ill.	22,874	11			18					2	
Ann Arbor, Mich.	15,010	5	2		14		2				
Anniston, Ala.	14,112		1		1				1		
Berlin, N. H.	13,599	3	1								
Braddock, Pa.	21,685	11			2						
Cairo, Ill.	15,794	7							1	1	
Chillicothe, Ohio.	15,470	7			5		4				
Clinton, Mass.	13,075	2									

¹ Population Apr. 15, 1910; no estimate made.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended Feb. 9, 1918—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 10,000 to 25,000 inhabit- ants—Continued.										
Coffeyville, Kans.	17,548		1		18		1		2	
Concord, N. H.	22,669	8	2				1			1
Galesburg, Ill.	24,276	7					1			
Greenville, S. C.	18,181	4			2					
Harrison, N. J.	16,950								1	
Hattiesburg, Miss.	16,482	10			2				1	
Kearny, N. J.	23,539	9			25		3			
Kokomo, Ind.	20,930	7	2							
Leavenworth, Kans.	¹ 19,363	6	1		5		2	1		
Marinette, Wis.	¹ 14,610	4					1			
Melrose, Mass.	17,445	1	1		1		2			
Muscatine, Iowa.	17,500						1			
Nanticoke, Pa.	23,126	10	1				1			
New Albany, Ind.	23,629	6			4					1
Newburyport, Mass.	15,243	6			2				2	
New London, Conn.	20,985	4			2		1			
North Adams, Mass.	¹ 22,019	11								
Northampton, Mass.	19,926	12	1						2	2
Plainfield, N. J.	23,805	9							2	
Pontiac, Mich.	17,524	16			5		2		2	1
Portsmouth, N. H.	11,666		1				2			
Rocky Mount, N. C.	12,067	3	1		2					1
Sandusky, Ohio.	20,193	4					1		2	
Saratoga Springs, N. Y.	13,821	4			5		2		1	
Spartanburg, S. C.	21,365	15			3				1	2
Steelton, Pa.	15,548						1			
Washington, Pa.	21,618				26				2	
Wilkinsburg, Pa.	23,228	8	1		11		1		2	
Woburn, Mass.	15,969	6								

¹ Population Apr. 15, 1910; no estimate made.

FOREIGN.

CUBA.

Communicable Diseases—Habana.

Communicable diseases have been notified at Habana as follows:

Diseases.	Jan. 21-31, 1918.		Cases remaining under treatment Jan. 31, 1918.	Diseases.	Jan. 21-31, 1918.		Cases remaining under treatment Jan. 31, 1918.
	New cases.	Deaths.			New cases.	Deaths.	
Cerebrospinal meningitis.....	.....	.....	1	Paratyphoid fever..	.....	.....	1
Diphtheria.....	12	1	5	Scarlet fever.....	1	.....	3
Leprosy.....	.....	.....	11	Smallpox.....	.....	.....	2
Malaria.....	20	.....	21	Typhoid fever.....	16	1	169
Measles.....	10	.....	21	Varicella.....	61	.....	76

¹ About one-half from the interior.

INDIA.

Cholera—Plague—Smallpox—Madras Presidency—Year, 1916.

During the year 1916, 875,013 deaths were notified in the Presidency of Madras. Of these, 16,735 were due to cholera, 11,498 to plague, and 21,903 to smallpox.

The number of deaths from cholera showed a progressive decrease from the number reported in 1914, viz, 68,449, and that for 1915, viz, 30,098. One district remained free from the disease and in one only 11 deaths from cholera were notified. Thirty deaths from cholera were notified in Madras city.

The number of deaths from plague rose from 3,889 in 1915 to 11,498 in 1916. The disease was especially prevalent in the districts of Coimbatore, Salem, and Bellary. The chief remedial measure was evacuation of infected villages.

Smallpox was present in 1916 in all districts of the Madras Presidency, but with a lower mortality than in 1915, the number of deaths being 21,903 as against 24,038. Fifteen municipalities remained free from the disease. A large proportion of the deaths occurred among children under 11 years of age.

The population of the Madras Presidency on which vital statistics were returned was 40,005,735.

Malaria—1916.

Malaria investigations were not generally carried out owing to war conditions. Itinerant dispensaries were operated in certain districts, and antimalarial measures were generally undertaken by the local bodies concerned, including quinine administration to all persons in the infected areas.

PORTUGAL.

Typhus Fever—Lisbon—Oporto.

On February 21, 1918, typhus fever was reported present at Lisbon, Portugal, with a few cases, and at Oporto in epidemic form.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.

Reports Received During Week Ended Mar. 1, 1918.¹

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
Philippine Islands:				
Provinces.....				Dec. 30, 1917-Jan. 5, 1918: Cases 134; deaths, 98.
Bohol.....	Dec. 30-Jan. 5.....	16	15	
Capiz.....	do.....	6	7	
Cebu.....	do.....	21	11	
Iloilo.....	do.....	14	10	
Mindanao.....	do.....	74	52	
Oriental Negros.....	do.....	3	3	
Provinces.....				Jan. 6-12, 1918: Cases, 91; deaths, 72.
Bohol.....	Jan. 6-12.....	23	21	
Capiz.....	do.....	12	11	
Cebu.....	do.....	3	1	
Iloilo.....	do.....	12	8	
Mindanao.....	do.....	40	30	
Oriental Negros.....	do.....	1	1	

PLAGUE.

Place.	Date.	Cases.	Deaths.	Remarks.
Ecuador.....				Sept. 1-Nov. 30, 1917: Cases, 68; deaths, 24.
Guayaquil.....	Sept. 1-30.....	3	1	
Do.....	Oct. 1-31.....	20	8	
Do.....	Nov. 1-30.....	45	15	

SMALLPOX.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada:				
Nova Scotia—				
Sydney.....	Feb. 3-9.....	1		
Prince Edward Island—				
Charlottetown.....	Feb. 7-13.....	1		
Ecuador.....				
Guayaquil.....	Sept. 1-30.....	8		Sept. 1-Nov. 30, 1917: Cases, 26; deaths, 2.
Do.....	Oct. 1-31.....	14	1	
Do.....	Nov. 1-30.....	4	1	
Egypt:				
Cairo.....	Nov. 12-18.....	1		
Italy:				
Leghorn.....	Jan. 7-13.....	7		
Mexico:				
Aguaascalientes.....	Feb. 4-10.....		1	
Mazatlan.....	Jan. 29-Feb. 5.....	2		
Vera Cruz.....	Jan. 27-Feb. 9.....	4		

¹ From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received During Week Ended Mar. 1, 1918—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Porto Rico:				
San Juan.....	Jan. 28-Feb. 3.....	1		Varioloid.
Portugal:				
Lisbon.....	Dec. 23-29.....	1		
Do.....	Dec. 30-Jan. 19.....	2		
Portuguese East Africa:				
Lourenço Marquez.....	Nov. 1-30.....		4	

TYPHUS FEVER.

Mexico:				
Aguascalientes.....	Feb. 4-10.....		10	Present. Epidemic.
Portugal:				
Lisbon.....	Feb. 21.....			
Oporto.....	do.....			
Switzerland:				
Basel.....	Jan. 6-12.....		1	
Zurich.....	Jan. 13-19.....	2		

YELLOW FEVER.

Ecuador.				Sept. 1-Nov. 30, 1917: Cases, 5; deaths, 3.
Guayaquil.....	Sept. 1-30.....	1	1	
Do.....	Oct. 1-31.....	1		
Do.....	Nov. 1-30.....	2	2	
Yaguachi.....	do.....	1		
Honduras:				
Tegucigalpa.....	Jan. 7-19.....		1	

Reports Received from Dec. 29, 1917, to Feb. 22, 1918.

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Antung.....	Nov. 26-Dec. 2.....	3	1	
India:				
Bombay.....	Oct. 28-Nov. 24.....	17	12	
Calcutta.....	Sept. 16-Nov. 24.....		76	
Madras.....	Nov. 25-Dec. 1.....	1	1	
Rangoon.....	Nov. 4-Dec. 1.....	3	3	
Indo-China:				
Provinces.....				Sept. 1-30, 1917: Cases, 74; deaths, 37.
Anam.....	Sept. 1-30.....	13	10	
Cambodia.....	do.....	19	12	
Cochin-China.....	do.....	32	13	
Saigon.....	Nov. 22-28.....	1		
Kwang-Chow-Wan.....	Sept. 1-30.....	10	2	
Java:				
East Java.....	Oct. 28-Nov. 3.....	1	1	
West Java.....				
Batavia.....	Oct. 19-Dec. 20.....	55	21	Oct. 19-Dec. 20, 1917: Cases, 100; deaths, 57.
Persia:				
Mazanderan Province—				
Astrabad.....	July 31.....			Present.
Barfush.....	July 1-27.....	34	23	
Chahmirzad.....				25 cases reported July 31, 1917.
Chahraastagh.....	June 15-July 25.....	10	8	
Kharek.....	May 28-June 11.....	21	13	
Sari.....	July 3-29.....	273	144	
Yekchambe-Bazar.....	June 3.....	6		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 29, 1917, to Feb. 22, 1918—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Philippine Islands:				
Provinces.....				Nov. 18-Dec. 29, 1917: Cases, 1,033; deaths, 693.
Antique.....	Nov. 18-Dec. 1.....	48	32	
Bohol.....	Nov. 18-Dec. 29.....	169	111	
Capiz.....	Nov. 25-Dec. 29.....	27	21	
Cebu.....	Dec. 23-29.....	3		
Iloilo.....	Nov. 25-Dec. 29.....	179	135	
Leyte.....	Nov. 25-Dec. 22.....	13	12	
Mindanao.....	Nov. 25-Dec. 29.....	337	195	
Occidental Negros.....	Nov. 25-Dec. 22.....	177	123	
Oriental Negros.....	Nov. 25-Dec. 29.....	99	62	
Romblon.....	Nov. 25-Dec. 1.....	1	1	
Siam:				
Bangkok.....	Sept. 16-22.....	1	1	
Turkey in Asia:				
Bagdad.....	Nov. 1-15.....		40	

PLAGUE.

Brazil:				
Bahia.....	Nov. 4-Dec. 15.....	4	4	
British Gold Coast:				
Axim.....	Jan. 8.....			Present.
Ceylon:				
Colombo.....	Oct. 14-Dec. 1.....	14	13	
Egypt:				
Port Said.....	July 23-29.....	1	2	Jan. 1-Nov. 15, 1917: Cases, 728; deaths, 398.
India:				Sept. 16-Dec. 1, 1917: Cases, 151,751; deaths, 113,434.
Bombay.....	Oct. 28-Dec. 1.....	103	85	
Calcutta.....	Sept. 16-29.....	2	2	
Hemrada.....	Oct. 21-27.....	1	1	
Karachi.....	Oct. 21-Dec. 1.....	11	9	
Madras Presidency.....	Oct. 31-Nov. 17.....	3,294	2,599	
Mandalay.....	Oct. 14-Nov. 17.....		89	
Rangoon.....	Oct. 21-Dec. 1.....	32	38	
Indo-China:				
Provinces.....				Sept. 1-30, 1917: Cases, 34; deaths, 39.
Anam.....	Sept. 1-30.....	12	11	
Cambodia.....	.....do.....	12	11	
Cochin-China.....	.....do.....	10	8	
Saigon.....	Oct. 31-Nov. 18.....	8	4	
Java:				
East Java.....				Oct. 27-Nov. 25, 1917: Cases, 75; deaths, 73.
Surabaya.....	Nov. 11-25.....	2	2	
West Java.....				Nov. 25-Dec. 9, 1917: Cases, 45; deaths, 45.
Senegal:				
St. Louis.....	Feb. 2.....			Present.
Siam:				
Bangkok.....	Sept. 16-Nov. 24.....	11	7	
Straits Settlements:				
Singapore.....	Oct. 28-Dec. 22.....	4	6	

SMALLPOX.

Algeria:				
Algiers.....	Nov. 1-Dec. 31.....	3	1	
Australia:				
New South Wales.....				July 12-Dec. 20, 1917: Cases, 36.
Abermain.....	Oct. 25-Nov. 29.....	3		
Cessnock.....	July 12-Oct. 11.....	7		Newcastle district.
Eumangla.....	Aug. 15.....	1		
Kurri Kurri.....	Dec. 5-20.....	2		
Mungindi.....	Aug. 13.....	1		
Warren.....	July 12-Oct. 25.....	22		
Brazil:				
Bahia.....	Nov. 10-Dec. 8.....	3		
Pernambuco.....	Nov. 1-15.....	1		
Rio de Janeiro.....	Sept. 30-Dec. 22.....	664	184	
Sao Paulo.....	Oct. 29-Nov. 4.....		2	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 29, 1917, to Feb. 22, 1918—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada:				
British Columbia—				
Vancouver.....	Jan. 13-19.....	3	.....
Victoria.....	Jan. 7-Feb. 2.....	2	.....
Winnipeg.....	Dec. 30-Jan. 5.....	1	.....
New Brunswick—				
Kent County.....	Dec. 4.....	.....	.....	Outbreak. On main line Canadian Ry., 25 miles north of Moncton.
Do.....	Jan. 22.....	40	.....	In 7 localities.
Northumberland County.....	.....do.....	41	.....	In 5 localities.
Restigouche County.....	Jan. 18.....	60	.....
Victoria County.....	Jan. 22.....	10	.....	At Limestone and a lumber camp.
Westmoreland County.....	Jan. 20-Feb. 9.....	4	.....
Moncton.....	Jan. 22.....	8	.....
Ontario—				
Hamilton.....	Dec. 16-22.....	1	.....
Do.....	Jan. 13-19.....	2	.....
Sarnia.....	Dec. 9-15.....	1	.....
Do.....	Jan. 6-Feb. 2.....	20	.....
Windsor.....	Dec. 30-Jan. 5.....	1	.....
Quebec—				
Montreal.....	Dec. 16-Jan. 5.....	5	.....
Do.....	Jan. 6-12.....	1	.....
China:				
Amoy.....	Oct. 22-Nov. 25.....	.....	.....	Present.
Antung.....	Dec. 3-23.....	13	2	
Do.....	Jan. 7-13.....	2	.....
Chungking.....	Nov. 11-Dec. 15.....	.....	.....	Do.
Dairen.....	Nov. 18-Dec. 22.....	3	1	
Harbin.....	May 14-June 30.....	20	.....	Chinese Eastern Ry.
Do.....	July 1-Dec. 2.....	7	.....	Do.
Hungtahoze Station.....	Oct. 28-Nov. 4.....	1	.....	Do.
Manchuria Station.....	May 14-June 30.....	6	.....	Do.
Do.....	July 1-Dec. 2.....	5	.....	Do.
Mukden.....	Nov. 11-24.....	.....	.....	Present.
Shanghai.....	Nov. 18-Dec. 23.....	41	91	Cases, foreign; deaths among natives.
Do.....	Dec. 31-Jan. 6.....	9	28	Do.
Tientsin.....	Nov. 11-Dec. 22.....	13	.....
Cuba:				
Habana.....	Jan. 7.....	1	.....	Nov. 8, 1917: 1 case from Coruna.
Marianao.....	Jan. 8.....	1	.....	Dec. 5, 1917: 1 case.
Egypt:				
Alexandria.....	Nov. 12-18.....	1	.....	6 miles distant from Habana.
Cairo.....	July 23-Aug. 5.....	5	1	
France:				
Lyon.....	Nov. 18-Dec. 16.....	6	3	
Do.....	Jan. 7-20.....	5	.....
Great Britain:				
Birmingham.....	Nov. 11-17.....	19	.....
India:				
Bombay.....	Oct. 21-Dec. 1.....	16	4	
Karachi.....	Nov. 18-24.....	.....	1	Nov. 11-17, 1917: 10 cases with 4 deaths; imported on s. s.
Madras.....	Oct. 31-Dec. 8.....	9	3	Menasa from Basreh.
Rangoon.....	Oct. 28-Nov. 24.....	4	1	
Indo-China:				
Provinces.....	.....	.....	.....	Sept. 1-30, 1917: Cases, 193; deaths, 56.
Anam.....	Sept. 1-30.....	61	12	
Cambodia.....	.....do.....	7	.....
Cochin-China.....	.....do.....	124	44	
Saigon.....	Oct. 20-Nov. 28.....	62	8	
Tonkin.....	Sept. 1-30.....	1	.....
Italy:				
Milan.....	.....	.....	.....	October, 1917: Cases, 2.
Turin.....	Oct. 29-Dec. 9.....	123	120	
Castellmare.....	Dec. 10.....	2	.....	Among refugees.
Florence.....	Dec. 1-15.....	17	4	
Naples.....	To Dec. 10.....	2	.....	Do.
Japan:				
Taiwan—	.....	.....	.....
Taihoku.....	Dec. 15-21.....	1	.....

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 29, 1917, to Feb. 22, 1918—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Java:				
East Java.....	Oct. 27-Dec. 9....	25		
Mid-Java.....				
Samarang.....	Dec. 6-12.....	1	1	Oct. 10-Dec. 12, 1917: Cases, 63; deaths, 1.
West Java.....				Oct. 19-Dec. 20, 1917: Cases, 217; deaths, 33.
Batavia.....	Nov. 2-8.....	1		
Mexico:				
Mazatlan.....	Dec. 5-11.....		1	
Mexico City.....	Nov. 11-Dec. 29....	16		
Do.....	Dec. 30-Jan. 26....	22		
Piedras Negras.....	Jan. 11.....	200		
Vera Cruz.....	Jan. 20-26.....		3	
Newfoundland:				
St. Johns.....	Dec. 8-Jan. 4.....	29		
Do.....	Jan. 5-Feb. 1.....	19		
Trepassey.....	Jan. 4.....			Outbreak with 11 cases reported.
Philippine Islands:				
Manila.....	Oct. 28-Dec. 8.....	5		
Portugal:				
Lisbon.....	Nov. 4-Dec. 15....	2		
Portuguese East Africa:				
Lourenço Marques.....	Aug. 1-Oct. 31....		5	
Russia:				
Moscow.....	Aug. 26-Oct. 6....	22	2	
Petrograd.....	Aug. 31-Nov. 18....	76	3	
Siam:				
Bangkok.....	Nov. 25-Dec. 1....	1	1	
Spain:				
Coruna.....	Dec. 2-15.....		4	
Madrid.....				Jan. 1-Dec. 31, 1917: Deaths, 77.
Seville.....	Oct. 1-Nov. 30....		26	
Straits Settlements:				
Singapore.....	Nov. 25-Dec. 1....	1	1	
Tunisia:				
Tunis.....	Dec. 14-20.....		1	
Turkey in Asia:				
Bagdad.....				Present in November, 1917.
Venezuela:				
Maracaibo.....	Dec. 2-8.....		1	

TYPHUS FEVER.

Algeria:				
Algiers.....	Nov. 1-Dec. 31....	2	1	
Argentina:				
Rosario.....	Dec. 1-31.....		1	
Australia:				
South Australia.....				Nov. 11-17, 1917: Cases, 1.
Brazil:				
Rio de Janeiro.....	Oct. 28-Dec. 1....	7		
Canada:				
Ontario—				
Kingston.....	Dec. 2-8.....	3		
Quebec—				
Montreal.....	Dec. 16-22.....	2	1	
China:				
Antung.....	Dec. 3-30.....	13	1	
Do.....	Dec. 31-Jan. 6....		1	
Chosen (Formosa):				
Seoul.....	Nov. 1-30.....	1		
Egypt:				
Alexandria.....	Nov. 8-Dec. 28....	57	15	
Cairo.....	July 23-Nov. 25....	126	64	
Port Said.....	July 30-Nov. 11....	5	5	
Great Britain:				
Glasgow.....	Dec. 21.....	1		
Do.....	Jan. 20-26.....	1		
Manchester.....	Dec. 2-8.....	1		
Greece:				
Saloniki.....	Nov. 11-Dec. 29....		72	
Japan:				
Nagasaki.....	Nov. 26-Dec. 16....	5	5	
Do.....	Jan. 7-13.....	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**Reports Received from Dec. 29, 1917, to Feb. 22, 1918—Continued.****TYPHUS FEVER—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Java:				
East Java.....	.....	.....	.....	Oct. 15-Dec. 9, 1917: Cases, 24; deaths, 3.
Mid-Java.....	.....	.....	.....	Oct. 10-Dec. 12, 1917: Cases, 54; deaths, 2.
Samarang.....	Oct. 17-Dec. 5.....	15	2	Oct. 19-Dec. 20, 1917: Cases, 73; deaths, 15.
West Java.....	.....	.....	.....
Batavia.....	Oct. 19-Dec. 20.....	73	17	
Mexico:				
Aguascalientes.....	Dec. 15.....	.....	2	
Do.....	Jan. 21-Feb. 3.....	.....	4	
Durango, State—				
Guanacevi.....	Feb. 11.....	.....	.....	Epidemic.
Mexico City.....	Nov. 11-Dec. 29.....	476	.....
Do.....	Dec. 30-Jan. 26.....	183	.....
Russia:				
Archangel.....	Sept. 1-14.....	7	2	
Moscow.....	Aug. 26-Oct. 6.....	49	2	
Petrograd.....	Aug. 31-Nov. 18.....	32	.....
Do.....	Feb. 2.....	.....	.....	Present.
Vladivostok.....	Oct. 29-Nov. 4.....	12	1	
Sweden:				
Goteborg.....	Nov. 18-24.....	1	.....
Switzerland:				
Zurich.....	Nov. 9-15.....	2	.....
Tunisia:				
Tunis.....	Nov. 30-Dec. 6.....	.....	1	
Turkey:				
Albania—				
Janina.....	Jan. 27.....	.....	.....	Epidemic.
Union of South Africa:				
Cape of Good Hope State...	Sept. 10-Nov. 11...	3,469	701	

YELLOW FEVER.

Honduras:				
Tegucigalpa.....	Dec. 16-22.....	.....	1	